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ABSTRACT

Four issues of this journal on gifted education published in 1995 focus on the following four topics respectively: (1) gifted students in the regular classroom; (2) brain research; (3) professional development; and (4) curriculum compacting. Major articles included are: "What Does the Research Say? Testing Your Knowledge About Gifted Education" (Karen Rogers); "Elementary Gifted Students in the Regular Education Classroom" (Margaret L. Rodrigues); "Effectively Teaching Young Gifted Children in the Regular Classroom" (Linda Kargs-Bone); "Meeting Needs of Gifted in the Regular Classroom" (Joyce Kutaka Kennedy); "Meeting the Challenge of Gifted Students in Regular Classrooms" (Beverly N. Parke); "No Girls Allowed!" (examines gender differences in computer usage, by Melissa Koch); "Who's Afraid of Acceleration?" (Wendy Christie); "How Sleep and Stories String and Shape Our Memories" (Robert Sylwester); "What Do Teachers at Home and at School Need To Know about Brain Research?" (Barbara Clark); "An Ethical Dilemma for the Classroom: DNA Research and Gene Manipulation" (Jerry Chris); "Is What You Are Sold, What You Get? The Experience of Parents of Intellectually Gifted in Pacific Rim Countries" (Glenison Alsop); "Prisoners of Time: A Look at the Report of the National Education Commission on Time and Learning" (Jean Drum); "What We Have Learned About Gifted Children" (Linda Silverman); "Teaching Gifted Learners: A Specialized Area of Professional Development" (Barbara Clark); "Differentiated Professional Development" (Sandra N. Kaplan); "Teacher Training for Gifted Education Programs in San Diego" (Elinor Ruth Smith); "Gifted Students as Gifted Teachers" (Katherine Gustin et al.); "Curriculum Compacting: A Systematic Procedure for Modifying the Curriculum for Above-Average Ability Students" (Sally M. Reis); "Implementing Curriculum Compacting: Suggestions for Assisting Teachers" (Marcia B. Imbeau); "Curriculum Compacting in Mathematics: Strategies for Success" (M. Katherine Gavin); "Curriculum Compacting: An Appropriate Intervention for Gifted Underachievers" (Thomas P. Hebert); and "Successful Curriculum Compacting: A Case Study" (Karen L. Westberg). (DB)

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THE JOURNAL OF THE CALIFORNIA ASSOCIATION FOR THE GIFTED
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COMMUNICATOR

GIFTED IN THE REGULAR CLASSROOM

What Does the Research Say?

Testing Your Knowledge About Gifted Education

by KAREN ROGERS

This article will put you to work, in more ways than just the reading of it. You are going to be a problem solver in the truest sense of the word. First, you should try to identify the educational practices described for each of the four gifted case studies. Then you will learn how to translate research effects into classroom terms as you determine which of your hypotheses about these educational practices can be accepted. Then you will be asked to explain *why*, when we know what we do about the needs of gifted learners, we continue to make school reforms that may hinder their progress and achievement.

If you have trouble, the "correct" answers to most of these puzzlers are given at the end of the article, but have fun trying to identify and hypothesize about these practices without peeking at the answers! By the way, the case studies describe "real people," all of whom have reached adulthood and can be considered happy, secure, successful individuals. Whatever happened to them in school did not scar them for life.

PROBLEM ONE: Identifying Gifted Practices

Case Study One: Kay

Kay entered school at 4 1/2 years of age. From first grade on, she read independently, completing the 1-8 basal reading series by grade 4. She skipped fifth grade. She was grouped with 8 other bright students in grades 7-8 for enriched classes in typing, foreign language and creative dramatics. In high school, she was placed in the "accelerated track" for math, science, social studies and English. She was allowed to work at her own pace in foreign language, completing four years of Latin in two years, and three years of German in one year's time. During the spring semester of her senior year, she took two history classes at the local college in the afternoons for college credit.

Problem: What practices were employed in managing Kay's gifted education? (Also, put a star next to any practice you think *does not* have research to support it as an appropriate option for gifted learners.)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Case Study Two: Bob

Bob attended a school in which he moved at his own pace for every academic subject from grades 1-7. He skipped eighth grade. He was placed in honors classes for mathematics, science, social studies and English in high school. During the spring semester of his senior year, he completed College Calculus at the local college, receiving one year's college credit for his work.

Problem: This may seem easy after the last

Continued on page 25

PRESIDENT'S COLUMN

by MARTHA FLOURNOY

Gifted students are in regular education classes whether by design or by chance. It is our job to offer as much support as possible to those students and their teachers. The CAG Teacher Institute, under the able leadership of Dr. Sandra Kaplan, is an exemplary model for this support. Through in-depth training, teachers are given strategies, both theoretical and practical, to assist them in differentiating the curriculum, allowing students to study subjects in greater depth, more complexity, in unique ways and at a faster pace. Well prepared teachers are the key to excellence in education, no matter who their students might be.

Parents can play a large role in promoting their children's education through their support of their teachers. Active parent groups can assist in a variety of ways:

- Fundraising to enable the class to have materials, access to resources, or experiences not found in school budgets.
- Fundraising to enable teachers to attend professional development activities, such as Teacher Institutes
- Committing time to help in the classroom
- Providing additional support to the class by arranging outside speakers, accessing community resource personnel or mentors for students.
- Assisting the teacher in order to make the time spent with the students most productive and meaningful

Our primary goal is to ensure that gifted students are being served in an appropriate manner. Given the fact that many gifted children spend a majority of their time in regular classes, it behooves us to make sure that the teachers in regular classes have the resources and training to provide the extended and complex learning our children require. No longer can we be satisfied with specialized training for designated GATE teachers only. Every teacher is a teacher of gifted students at some time and in some manner; we must see to it that every teacher receives training in the teaching of gifted learners.

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CAG encourages all interested parties to submit articles for publication. All submissions will be given careful consideration. Photos and camera-ready art work are particularly desirable. Student work should be accompanied by teacher's name and school. Send all material with your name, address, and phone number to Jean Drum, *Communicator* Editor, 7822 Belgrave Avenue, Garden Grove, CA 92641. You may phone Ms. Drum at 714/892-1745.

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CALENDAR

CAG Demonstration Sites
CAG has developed differentiated curricular units for use in demonstration sites throughout the state. CAG assists its demonstration schools with training and a stipend. You are cordially invited to attend one of the following demonstrations and watch differentiation in action.

November 16, 1994
Bakersfield - Stockdale High School. Contact Helen Felton at 805/665-2800, Ext. 23.

Bakersfield - West High School. Contact Joan Jacobs at 805/832-2822.

December 6, 1994
Burbank - Luther Burbank Middle School. Contact Donna Coffey at 818/558-4653.

January 26, 1995
Los Angeles - Euclid Avenue School. Contact Victoria Steinitz at 213/263-6792.

Watch future issues of the *Communicator* or the *Intercom* to learn the visitation dates for the following demonstration sites:
Glendale - Mountain Avenue Elementary School
Sacramento - Martin Luther King, Jr. Junior High School

March 3–5, 1995
33rd Annual CAG Conference, *Opening the World to Gifted Students*, Parc Oakland Hotel & Convention Center, Oakland, CA.

July 30–August 4, 1995
11th World Conference on Gifted and Talented Children, *Maximizing Potential: Lengthening and Strengthening Our Stride*, Hong Kong.

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We are the Very Model of.....?

by JEAN DRUM

W.S. Gilbert's model of the modern major-general valiantly confronting the pirates of Penzance is indeed a paragon of military talent. After all, how else could you regard someone who is "teeming with a lot of news about the square of the hypotenuse?" The real question is whether this stunning role model is truly effective in inspiring his men to aspire to his dizzying heights of skill and valor and thus transform the entire army into a marvel of martial success. Gilbert, wisely, has left several generations of audiences to come to their own conclusions.

But what of modern gifted students who know a lot, not only about the square of the hypotenuse, but about computers and black holes and the effects of oil spills on the environment and Mozart and Leonardo da Vinci and the geopolitics of the Roman Empire? What does it really mean to be the very model of a gifted student?

When the discussion turns to the education of gifted students in a heterogeneous classroom setting, one of the advantages often mentioned in having gifted students in the class is that they serve as "role models." The presence of the gifted learner who is eager, successful and confident, it is said, will inspire others to be equally successful. The less able student may have to work harder to reach a higher level of achievement, but, spurred on by the example of the top student in the class, he will persevere. Even if he never reaches the "straight A" record, his attainments will have been improved and enhanced by his efforts to match the best.

This is an idea with a long history (and a very noble one as well)—the idea that we will be impelled to improve our lives by following good examples. Children especially have always been urged to "work hard like Daddy," or "keep your room neat like your sister does," or "take better care of your toys like Janie next door does." Our admiration for the talents and good qualities of our heroes always includes some sense that we should try to be more like them, and we may very well succeed to a greater or lesser degree. It is also quite true that if people never see achievement and success, it is very difficult to care about it or consider it as a possible part of their lives. So, parents and teachers, among others, try to be good role models. We especially want children who live in an atmosphere of poverty and failure to see successful adults, especially successful adults who have experienced those same childhood conditions, so that these children will realize that they too can become successful. We are terribly distressed when public figures fall from grace, because we have always wanted our policemen, our governmental leaders, our educators to be role models of the highest order.

So if the concept of role models as inspiration for achievement is so good, so universal, why are we, as educators of the gifted, frowning uncomfortably when we think of gifted children serving in this capacity in a classroom?

Perhaps it is because they are children and it is a classroom. For educators, the prime purpose of a classroom in a school is to give children an opportunity to learn all that it is possible for them to learn, and the goal of optimum development and progress must be first and foremost for every student in every classroom. This is the right of every child in school, and no child should be expected to sacrifice his or her chance at learning for any reason.

At this point, this is beginning to sound rather "me, myself and I," and gifted education certainly doesn't need that kind of reputation. But look at it from this perspective. No school forms its sports teams heterogeneously and then says that it is necessary to do this so that the naturally outstanding athletes can play with the less talented ones and act as role models. The Football Boosters Club wouldn't countenance that for one second! The Concert Choir isn't formed heterogeneously so that the students with outstanding musical ability can inspire those who can't carry a tune in the hope that they will learn to sing. Why then is it suggested that this kind of arrangement is both suitable and workable for academic subject classes? Every school endeavor, sports, music, drama, journalism, forensics, encourages, indeed insists that, the best talent gets to the top. Every school

endeavor except the classroom. This ought to give all of us, educators, parents, and society at large something to think very carefully about.

However, we need to think through the whole concept of what a role model should be and what it should be able to accomplish, because we should have role models. In fact, role models fall into two categories—heroes and true role models. We admire heroes greatly. We like to hear of their accomplishments and we are thrilled at how they have changed the world. We don't aspire to emulate their accomplishments because we know we could not possibly do that, but we know that they enrich our lives and our society. We may very well not even want to be able to do what they do and live the kind of life that a person so different from the norm lives, but we are glad that they have done so.

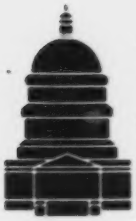
The true role model, on the other hand, is someone more like us, someone whose accomplishments seem possible to us, someone whose lifestyle we view as normal for us. A true role model has to be someone of whom we can say, "I can be like that if I try." This is where educators must consider very carefully what may be happening in the classroom. Is the math whiz, the one who always gets the right answer first, really going to inspire the child to whom long division is a deep dark fog to improve his math skills? Does the first grader who can read really well at the fourth grade level really encourage the little one who is struggling with beginning consonant blends? What all too often happens in situations such as these is that the gifted child is bored, puzzled ("Mom, if Sam would just listen to the teacher he would get it.") and often embarrassed at being so different. The teacher is trying to meet too many disparate needs, and the struggling child is discouraged. None of this should be happening.

Now, none of this should be taken to imply that gifted children ought to be bundled off into the academic stratosphere to keep them from observing that they are different in some ways or to protect the egos of average learners. It does mean that keeping them in a heterogeneous classroom primarily for the purpose of inspiring and encouraging other children is probably not going to work out that way.

We all (children and adults) need both heroes and true role models in our lives We need heroes to admire, to lift our spirits in appreciation of what man is capable of. We need to see our heroes and know what they do, but we don't need to play on the varsity team with the star quarterback or sing with Pavarotti. It wouldn't do us much good anyway, and we surely wouldn't expect Pavarotti to sing in the beginning chorus to inspire the rest of us.

What we do need is close contact with our true role models, those whose shoes we may fill some day, those who are far enough above to inspire, but close enough to encourage.

Besides, we need to look at this from a practical point of view. Given the well-known fact that the best students are just about the least popular kids in any school (note Steve Schroeder-Davis' article), the very idea that they could serve as effective role-models isn't really based on reality. Like, man, you think I want to be an egg-head like him? No way!



The View From Sacramento

Gate Application Review

California Department of Education received 700 applications for gifted and talented education funding from local school districts, county offices of education and charter schools. The applications were reviewed during the last week in June by 60 volunteers from the field (assistant superintendents, categorical program directors, principals, teachers and parents) who paid their own expenses to read for four days. The applications were rated at one of three levels: funding for three years, funding for one year, and resubmit. If two readers disagreed on the number of years of funding approval, the district automatically received one year. The GATE director is reading all one-year approvals and upgrading a few of them to three years. A total of 218 applications were approved for three years and have been sent a letter of congratulations. Thirty-five applicants were asked to resubmit by October 31, with specific suggestions on how to obtain approval for funding, and 448 applications were approved for one year of funding and received a letter of congratulations to let them know that another letter would be sent by November 30 specifying what they need to do to upgrade to a three-year level by June 15, 1995. Although the review was not designed as a staff development activity, several of the reviewers remarked that it was the best staff development activity they had attended all year. It was extremely helpful for them to share their successes and find ways to correct some weaknesses in their programs.

Generally, identification procedures were excellent. Most districts are very thoughtful in the way they identify students, since they look at a variety of measures and take special care to fairly evaluate students from underrepresented minority groups. Some districts did not realize that Title 5, section 3831(b) required districts to identify on the basis of intellectual ability; all other areas of identification are optional.

Many of the school-based coordinated schools are having a hard time providing programs for gifted and talented pupils. In some cases, school site councils in SBCP schools don't realize that it is their responsibility to describe in the state plan "instruction and auxiliary services" designed to meet the needs of gifted and talented pupils. Other councils struggle with how to provide a program when expertise and resources may be slim. A handful of districts are doing an excellent job in this area and submitted school site plans describing comprehensive programs for gifted and talented pupils.

Many districts and schools are also struggling with how to focus and utilize parent input. The law requires that SBCP schools should have parents on the school site council who are intimately involved in planning, delivering and evaluating GATE programs. Schools and/or districts may elect to have a GATE parent advisory committee. Many of the smaller districts meet individually or in groups with parents on a more informal basis. Sometimes parents are invited to be a part of a student study team. There are many ways for involving parents; districts with little or no opportunity for parents to be involved in the program were approved for one year at best.

Morning

I tap the darkness
Which turns to sunshine
I pour my potion bottle
Of awakeness
On all living things
I throw instant clouds
On the sky
I dip my fingers
Into my jar of dew
And sprinkle it everywhere
Then, I lay back on a sunray
And wait for another day.

—Elizabeth Cohen, Age 7
Mirman School

Elementary Gifted Students in the Regular Education Classroom

by MARGARET L. RODRIGUES

Archaeologists using picks and brushes chip away at the ancient ruins while analyzing and recording data; chemists perform scientific tests to determine the makeup of rock samples; anthropologists interpret the use of discovered artifacts and then recreate a pictorial depiction of a prehistoric civilization. Is this a scene from the laboratory of scientists in a modern museum who are tracing our historical past? No, this scene is from a regular 6th grade classroom at Nordstrom Elementary School in the Morgan Hill Unified School District, Morgan Hill, California. Two years ago Nordstrom School was chosen as a California Association for the Gifted Demonstration Site, showcasing differentiation within the regular classroom structure. By analyzing current research on successful people and by using Nordstrom classrooms as "learning labs," techniques, strategies and curriculum options have been developed, tried and tested in order to create a program to serve gifted and talented students within a regular classroom structure.

Grouping Options

A collegial group of three teachers teach 80 regular, special education/speech and English language learner students along with ten identified gifted and talented students.

An accelerated math class is offered for students identified as able by standardized test (upper 50%) and teacher recommendation. Accelerated math students design, price, furnish, landscape and insure their dream houses by using mathematical formulas. They create a shopping mall, sell items, discount sales and figure taxes, rent and overhead expenses while the regular classes shop, write checks, and stay within a budget. The remaining students are offered two regular 6th grade classes in math.

Students who score in the top 75% on language and reading standardized tests are grouped together for an "extended" or enriched language arts class. Students are grouped into heterogeneous homerooms from which they "switch" for each teacher's specialty: science, social studies and life skills. The accelerated and "extended" math and language arts classes afford an opportunity for the Gifted and Talented Education (GATE) students to be clustered together for a period of the day. Curriculum is compacted to allow time for more advanced and in-depth study. The extended language class students use advanced literature based on a similar theme, write original essays using more sophisticated author's devices and perform and study Shakespeare, presenting *Julius Caesar* for a Greek and Roman living history day (Classics Day).

Within an area of study, cooperative learning groups are used with a variety of compositions. Skill grouping, in which students with similar abilities are grouped together for a task, is one vehicle for meeting GATE students' needs. While one group of regular education students constructs a chart showing the levels of the rain forest, an ad hoc group of GATE students brainstorms solutions to stopping deforestation of our world's rain forests, chooses one suggestion and acts on it. Another regular education group lists animals found in the rain forest, while a cadre of GATE students acts as representatives from indebted third world nations whose only natural resources are the rain forest and presents arguments for their viewpoint. The teacher orchestrates the learning by providing the activities matched to the students' abilities.

Individualized learning occurs through our computer-assisted instruction and individualized projects. Students are accountable at various stages in the process and are evaluated in a variety of ways. For example, students may construct charts and graphs using drafting tools and techniques and information about their country. Charting, graphing, mapping, research and report writing skills are taught all year. All products are collected, filed and then returned for compilation into a comprehensive report due at the end of the year.

Curriculum Options, Activities and Strategies

Grouping students is not the only method used to meet the needs of the gifted within the regular classroom. GATE students use other materials or are involved with other activities in the same content area. While regular students are studying about the immigrants' journeys to America at the turn of the century, GATE stu-

dents are given the task of researching present day immigration, including the recent influx of Cuban exiles so they can present both sides of the issue in a debate.

Insuring that students know the basic tools of each discipline is a cornerstone of the program. Too often GATE students are pulled out for enrichment while basic skills are not mastered. All students must know how to write and communicate, read and comprehend, realize the legacy of the past and how to find our historical record, use and understand the scientific process and problem solve and think logically in math. Constant modeling, "thinking out loud" and opportunities to learn and use these basic tools is essential.

In the life skills class students discover their learning style from the seven learning modalities and participate in lessons that approach a subject using activities from each style. These activities allow students to "try on" different styles and learn in a multitude of ways. GATE students need to understand that they may have a different way of approaching problems and solutions than regular students.

Most assignments and projects used in the program are open-ended and allow for students to set their own limits. Samples of all projects from previous years are saved and shared with students, thereby setting a rubric for acceptable work. GATE students often soar above our expectations. One very successful activity is the creation of scientific field guides. Using ten make-believe characters, students are taught how to create a scientific "go-to-key" and name animals using the genus and species with Greek and Latin root words. Students are also taught through modeling how to describe each animal, its habitat, and its job. The finished product is *A Field Guide of Seldom Seen and Little Known Creatures*, written in a scientific manner and complete with pictures of the creatures within their habitats. Books are bound and saved for our yearly Children's Book Fair. By year's end, students "publish" six different books in a variety of genres, as well as produce models and projects in conjunction with a field of study, for example Black History or Future Vision invention.

Simulating real-life experiences is another consistent part of our program. The students are the judge, bailiff, doctors, scientists, witnesses, jurors and lawyers in the trial of *The U.S. vs. Mr. Tobacco*. Contractors, project design engineers and architects work together to design superstructures of balsa wood and toothpick bridges spanning the "Colorado River." Rocket scientists build rockets, airplanes and helicopters during a unit on flight. Students as teachers instruct buddies in the primary grades on endangered animals and ways they can be saved from extinction.

Our classrooms are "hands-on" or laboratory-type work centers. Math is learned through in-depth problems using real-life situations and materials. Science is learned by using the scientific process to test variables, create "humdingers" or determine which suspect committed the crime through fingerprint analysis and DNA testing. History is learned through studying primary sources such as the art, architecture, folktales and artifacts of a culture. The teacher is a facilitator more than a lecturer and a coach guiding students through iterations.

In accordance with *It's Elementary*, all classrooms are replete with a rich variety of materials, resources and opportunities. By specializing in an area of study, the teachers are able to collect the supplies, books, materials and resources needed to conduct a meaningful, child-centered learning environment.

Many types of challenges are offered in the classroom. A game table full of science, logic and math puzzles is available for students. A weekly "guessing jar" helps students to hone their estimation skills. Artifacts, primary sources, costumes and books are available for each area of study. All students participate in the *Golden Sextant Challenge*, a program of merit badges earned by performing various tasks such as knot tying, signing the alphabet, following a trail using orienteering, navigating a ship or singing sea chanties. This program allows other students to become experts in a field, with 25 challenges available. One special education student, who had difficulty reading and writing, became the knot tying expert and all the students came to him for help and validation.

All students in the program are given the opportunity to succeed and participate in these stimulating activities. The special education resource teacher works with the regular education classroom teacher to support the projects. Program modifications are made in response to the students' abilities; however, they experience the same rich core curriculum as the rest.

Programs Outside the Classroom

In addition to the classroom program, a partnership has been formed with parents, community groups and businesses in the community. Advanced seminars are held with experts

in various fields of study. Community groups such as art docents and professionals from a variety of careers offer enrichment lessons. Guest lecturers from the local museums, authors and scientists provide demonstrations and opportunities for men–toring. Leadership opportunities are nurtured through an active Student Council that participates in both school related activities and community service projects.

Summary

Can GATE students' needs be met within the regular classroom structure while still meeting the needs of all students? YES! The needs of GATE students can be met within a regular classroom structure by using grouping options such as clustering and accelerated, heterogeneous and ad hoc skill grouping. Curriculum options, activities and strategies based on the principles of differentiation must be used in conjunction with the core curriculum. Program options outside the regular classroom must be explored and utilized. However, five important ingredients should be present for a program to work.

1. Teachers who understand, believe in and are trained in gifted education strategies and who work together in a collegial manner.
2. An administrator who is supportive of an educational program that is not a typical paper and pencil approach.
3. A district that encourages innovation, equity and excellence in education.
4. Parents who understand and support an enriched program for all students.
5. Students from all backgrounds and levels of ability eager to take on the challenge and accept the opportunities provided in a stimulating program.

Margaret Rodrigues is an educator and CAG parent representative from the Santa Lucia region.

Effectively Teaching Young Gifted Children in the Regular Classroom

by LINDA KARGS-BONE

Some folks believe that unicorns exist only in fantasy and fiction. Yet, when I began to study the attitudes of preschool educators toward gifted and talented young children, the image of the unicorn kept appearing. After all, a unicorn is startlingly different, unique and full of energy—a product of vivid imagination. In many ways, young gifted children resemble unicorns when they emerge in the regular pre-school classroom. Some teachers greet the little unicorns with delight and warmth. However, there are a great many educators who feel intimidated, unsure and unprepared to teach and manage these unusual little ones.

Gifted young children require special forms of education. This education must often take place inside the parameters of the regular classroom. Teachers may be initially intimidated by the challenge of teaching unusually bright or talented children. Moreover, they may feel that such teaching will require expensive, elaborate materials that are not readily available. Fortunately, this is not true. Following is a list of suggestions for effectively teaching young gifted children in the regular classroom.

1. **Extend learning.** Do not feel pressured to accelerate. For example, four-year-old Ben displays a number of characteristics from cluster 2, the mathematical-science cluster. Should you supply him with first grade math worksheets? Yuck! Offer more blocks, different kinds of unifix cubes to pattern; let him work with graph paper, use thermometers or help you do experiments.
2. **Use high quality, child-centered computer software.** There is good software for both mathematically-logically gifted children and linguistically talented children. Look for programs that are colorful, use sound and music, and allow children to be flexible and creative in their work.
3. **Spin off.** When you do an activity with the entire class, plan a spin-off activity that will enhance the particular gift or talent of your special learners. For example, after reading a fairy tale to the entire group you might provide some props and ask a group of children to plan a short dramatization; work with a few linguistically gifted children on writing a chart story about a particular character's behavior; provide colored chalk and have your artists design a classroom mural that depicts the story; or engage the kinesthetically talented children in a creative movement activity with some appropriate "fairy-like" music. Remember, all children in your program can benefit from such enriching activities. Perhaps there is a child who does not display unusual talent in a particular area, but does show interest and enthusiasm; involve him too!
4. **Centeriffic.** Learning centers are a focal point in good early childhood programs. We usually supply centers for fine motor development, housekeeping play, blocks, and art; what about specific interest centers? Informally survey your gifted children (child). What subject is particularly enticing to him or her? dinosaurs? growing things? seashells? bicycles? bagels? Create a new learning center around the special theme. Even something as simple as magazines, scissors, sentence strips, glue and markers, in a colorful basket, can lead a gifted child to design a cartoon strip about "Barney the Bear who eats bagels on his blue bicycle." Gifted children are inventive. They just need a few materials and a lot of praise.

like any child.

5. **Express Yourself.** As you may have noticed from the first cluster of characteristics, a prominent trait of gifted children is linguistic ability, both oral and written. Therefore, I consider it essential to offer a substantial share of pre-school time toward the enhancement and nurturing of linguistic gifts. Keep in mind that the pre-operational (Piaget) stage of development, ages 2-7, are a flourishing time in language development for all children! Here are some simple ideas.
   - Keep a basket of inexpensive, blank cassette tapes and a tape recorder available. This is for "radio shows," dictated stories, song writing, and recording sounds for background noise in block play towns.
   - Provide sentence strips, markers and copies of the Sunday comics. Children can write and illustrate their own cartoon strips.
   - Make a puppet theater out of a refrigerator box or a suspension type shower rod and old curtain. Leave a supply of hand puppets out or provide materials for children to make their own. Watch the show take off!

Good teachers take the time to provide colorful, appropriate activities for young children. Gifted young children are unique in their learning style. Still, I am convinced that regular classroom teachers can provide an excellent environment for these children. All they need is awareness of the characteristics and types of giftedness and a basket full of goodies. Isn't that what all good teachers use?

Recommendations

On the basis of this research and my discussions with dozens of teachers, I would like to offer these suggestions for school districts and individual schools. Such changes would make schools a more positive, cogent experience for gifted children.

- Open more magnet schools for the arts and sciences. Include young children in these programs.
- Consider placing resource teachers, trained in gifted education in public schools and centers, to work with gifted young children.
- Develop screening tools that help regular teachers assess a variety of gifts and talents (artistic, scientific, kinesthetic, social, linguistic, mathematical, musical).
- Offer inservice training to present staff, so that they can begin to meet the needs of gifted children in their classrooms.
- Broaden the undergraduate curriculum to include practicum with gifted children.

Conclusion

If you meet a unicorn on your path today, what will you do? Turn away? Pretend that he or she does not really exist? Pretend he or she does not need your love and attention? I hope not. A unicorn can add magic, power and beauty to your life and to your teaching. It is a dimension of teaching that many of us have not explored. The young gifted child is waiting and watching. Let us welcome the little unicorn with joy and great expectations!

Linda Kargs-Bone is Director of Field Experiences, Charleston Southern University. This article first appeared in *GSG Newsletter*, the journal of the Georgia Supporters for the Gifted, Fall 1993.

How The First Pot Was Made

Many moons ago the Mojave Indians lived in a radiant area in which they found a pale, squashy substance which they called clay. With this clay, they made rocks which appeared dull red in color. They liked to throw the rocks around and at each other. When the rocks crashed together, the collision resulted in a deafening boom.

The Great Spirit erupted into bitter anger over the unpeaceful noise. Bitterly, he stopped the rain and caused the clay to toughen and form the sandy, dry Mojave Desert. The people whined for forgiveness. The Great Spirit said strongly, "To get the clay back you must use it to make something useful."

The people replied jokingly, "What could be more useful than rocks?" A silence came over the tribe. They were sad and speechless, all but the crying babies. The tears of the children dampened the clay and once again allowed them to form round rocks, which of course they began to throw again. Two rocks collided, one pushing a giant dent into the other, which formed a short, stubby pot—the first of its kind.

The Mojave people were amazed by their creation! They examined the pot, turning it over and over and considering its possibilities for something useful. They realized that they could use the bowl for many things. It could hold liquids, feather, flowers, rain and even food. They also realized if they had their water back, they could make more pots.

So the Mojave people offered their creation to the Great Spirit. The Great Spirit was touched by their gift and he cried tears of joy, making it rain once again. Places where his tears fell in abundance and gathered created small oases in the desert. The Great Spirit kept the rest of the desert dry as a reminder that the value of a thing depends on how it is used.

Jason Lau, Austin Nichter, Emily Reis, Josh Eisenberg, Laura Miller
4th Grade
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Meeting Needs of Gifted in the Regular Classroom

by JOYCE KUTAKA KENNEDY

I would guess that the majority of gifted students in the state are placed in a regular classroom for the majority of their day. Consequently, most gifted students are placed with "regular" classroom teachers. Given that situation, it might be useful for "regular" classroom teachers to know some strategies to teach to the gifted in a way that can encompass all students in the classroom. Notice that my emphasis is in teaching to the gifted and adjusting downwards as needed in individual cases. I find that most students can function at higher, more creative and more challenging levels than many believe. I have taken this approach with my self-contained classes for many years as a fifth grade teacher and this year as a science teacher in middle school.

I basically teach to the high end of my class and make adjustments for the students who aren't capable of functioning at high levels of expectation. Instead of teaching to the middle of my group, I challenge my entire class to do the assignments designed for top kids. To the greatest extent possible, I take classroom discussions to the highest levels my students can attain. Asking for clarification of thinking by my top students is one method I use to bring all students to higher levels of mental operation. I strive for depth in my lessons with the class and build complexity into some of our explorations. When novelty is introduced in class assignments or homework, all students are expected to perform, although some have more difficulty understanding the assignment and performing up to standards. My GATE and high end students seem to thrive in a rich, challenging atmosphere, my middle students usually develop new skills, and even though my weaker students may struggle, they are exposed to many new ideas.

Two types of activities allow for the range of students to succeed at their own level. One is the construction of questions and answers on material studied in language arts, science and social studies. I have students write their own comprehension questions and then provide their own answers. I stress to the students that I want questions that make them think, not "yes or no" type questions at lower levels of thinking. During the sharing of the students' questions, I point out excellent questions and the parameters of challenging, engaging questioning. At first, my GATE students tend to be the ones asking the interesting questions, but over time most students can construct higher level thinking questions.

Another category of activity which affords success to a range of student abilities is group work, specifically in the area of performing arts. I reinforce covered material by having student teams perform some aspect of whatever subject we're studying. After designing teams or letting students create their own teams, I give them a general outline of what content I want covered. The students then write their material with varying degrees of help and guidance from me. My GATE students are often stronger writers, but other students are also validated in their contributions to the process. Everyone ends up on stage with speaking parts, and I work on many social skills such as conflict resolution and communication skills.

Another major area of work on my part is to modify the self perception of students. I provide my GATE students the opportunity to stretch themselves, and I prod them into doing their best, not "A" work according to class standards. Many students cruise through their classes without putting much effort into their work, and when they reach my class, they have to learn how to learn. My middle students benefit by seeing themselves as more capable than they previously thought, which is an extremely powerful intervention when I succeed. I do the best I can to enhance the self esteem of my less capable students.

Basically, I've shared two methods I use to teach my class at levels that interest and challenge my GATE students. Most of my GATE parents have been pleased with the curriculum and challenge I have provided their children. I have also had many parents of my middle range students express gratitude that their child had the chance to work at higher levels of expectation than they previously experienced. I think the most important part of my approach to teaching my GATE students is my philosophy of reaching for the highest potential in all students, particularly the most able. My standpoint is that if more "regular" classroom teachers taught to the high end of the class, more students, GATE and otherwise, would succeed.

Joyce Kutaka Kennedy is the CAG Educator Representative from the Bay Area and a middle school science teacher.

Meeting the Challenge of Gifted Students in Regular Classrooms

by BEVERLY N. PARKE

Seven-year old Julie finds shapes intriguing. She has always been drawn to puzzles and pictures that include unusual forms. The tangram set she received for her fifth birthday has almost been worn out as she spends hours exploring the possibilities inherent in shape, color, design and mathematics. It is only natural that her interest has led her to the intricacies of geometry and what it can add to her quest to understand the interrelations of these concepts. Her classroom teacher and parents recognize her natural ability in this area and try to encourage her study as best they can. Unfortunately, her school district does not begin programs for gifted and talented students until the fourth grade, so her mathematics and design instruction must occur in her second grade class.

Geopolitical relations have caught the interest of Craig as he has progressed through the grades into high school. His family's subscription to *National Geographic* was the first introduction he had as a child to the world beyond the urban environment in which he was raised. With little opportunity to travel, he has had to rely on mass media, books, and local politics to further his understanding of the way the world works. Ecology has become his overriding interest as he explores the relationship between world politics and environmental issues. Although his high school offers three years of science, world and national history and two foreign languages, he still feels as though there is no structure through which he can bring together the academic disciplines that support his interests so that he can comprehensively develop an understanding of the subtleties of the issues.

Both Julie and Craig have discovered the gaping hole in instruction for students with high abilities. Overwhelming evidence concludes that most school districts do little to address the needs of gifted and talented students in regular classroom settings. With the advent of school reform and restructuring efforts coupled with renewed emphasis on excellence and equity in education, focus has turned once again to the services available for the population.

Steps to Full Service

The goal for program planners dealing with the challenges of meeting instructional needs of gifted and talented students in regular classroom settings is to create a learning environment in which these students can fully develop their abilities and interests without being estranged from classmates or the feeling of belonging to the class group. This is a tall order for both teachers and students, because the normal remedy in this situation is to segregate these students into small homogeneous groups or to assign individual projects. While each of these strategies has its place, neither is sufficient to accomplish the goal. Therefore, we must look beyond the conventional, consider the overall dynamics of the classroom and all its students, and plan for a working environment in which *all* students can fully develop their abilities and interests within the confines of one organizational unit.

When considering the provisions necessary for students of high ability, the following questions must be posed and answered:

1. ***What are the characteristics of the gifted and talented?*** When asked this questions, most teachers will respond by citing three observations. First, the gifted tend to get their work done quickly and may seek further assignments or direction. Second, they ask probing questions that tend to differ from those of their classmates in depth of understanding and frequency. Finally, they have interests in areas that are unusual or more like older students. In fact, these observations define the characteristics that challenge regular classroom teachers the most as they attempt to bring full instructional service to the gifted and talented. These students potentially differ from their classmates on three key dimensions: (1) the pace at which they learn; (2) the depth of their understanding; and (3) the interests that they hold. In order to develop instructional programs that will meet the needs of gifted students in regular classroom settings, these three characteristics must be addressed and accommodated.

2. *What is the role of the regular classroom teacher?* Most teachers have, on occasion, had students in their classes who know more than they do about topics inherent in their courses of study. When this occurs, it is a pivotal moment as the teacher considers what needs to be done. If we only see ourselves as fountains of knowledge from which the students drink, the answer may be—not much. If, on the other hand, we define our roles as facilitators of learning, we find a great deal to offer students who have seemingly unending needs to explore their worlds. As a facilitator, orchestrator, designer or coach, it is the teacher who presents the conditions for learning and guides the students through the instructional maze by giving them the guidance and skills necessary to learn, understand, interpret and extend their knowledge base. This requires teachers to have skills in both their subject area (understanding both its content and the manner in which its professionals think) and in the management of learning.

3. *What program options are needed to meet the needs of these students?* One of the greatest mistakes made by districts attempting to deliver programming to their gifted and talented students is that they look for unidimensional approaches. It is not uncommon to hear program personnel from adjoining districts exchanging information on the program (singular!) that they are currently using. The heterogeneity of the gifted population leaves only one remedy that has any chance of succeeding over the long haul. That is a multiple programming approach—one in which a constellation of programs is available in which students can participate based on their abilities, needs and interests. Some options may be specifically tailored to high-ability students (such as Advanced Placement, honors or resource room programs). Other may be found in the course listings for general education that are available to all students, but which serve gifted and talented students well (such as student council, school newspaper, Future Problem Solving, computer club, etc.). Profiles of students' abilities, derived from comprehensive assessment batteries, can then be used to match students appropriate programs.

4. *What instructional provisions must be made?* Designing instructional opportunities for gifted students in regular classrooms finds its inspiration at the source of the concern—the students. It is the characteristics of these students that lead to the instructional accommodations that are appropriate. The accelerated pace at which gifted and talented students learn information requires that flexible pacing strategies such as skill grouping, curricular compacting, contracting and credit by examination be integrated into classroom management formats. The need to explore topics in depth leads program planners to include provisions for students that might include original research, independent studies or investigations, mentorships or classes at another school or institute of higher learning. When addressing the unique or advanced interests of these students, planners might be inspired to include opportunities for students involving minicourses, interest groups, clubs, science or art fairs or internships. The teachers' challenge is to identify students' needs, develop and gain access to appropriate programs and curricula that correspond to those needs, and monitor student progress through the course of study. The students' challenge is to make the best possible use of the resources available while becoming fully responsible for their own learning. Hopefully, a student-teacher-parent team will emerge that will result in excellent educational experiences.

Next Steps for Julie and Craig

Clearly Julie and Craig are not situated ideally, but few students are. This does not mitigate the responsibility educators have to assure that the best possible program is delivered to them and their classmates. With understanding, flexibility, coordination and teamwork, a commitment was made to both of these students by their school districts. That commitment was to provide them with the best education possible. For Julie, it meant access to a library of advanced materials in geometry, an invitation to join the fifth graders during their geometry unit, and an independent study with an art specialist looking at the works of Picasso. Craig became involved in the neighborhood recycling center and set up a recycling program for his school with the assistance of his service club. He was selected to attend a summer program at the local university centered on a geopolitical simulation involving diminishing natural resources and the effect on world political stability. These are small connections in the ongoing process of tying Julie's and Craig's needs to their educational opportunities. It is these small connections, however, that make all the difference in the lives of students.

Suggestions for Further Reading may be obtained by contacting the *Communicator* editor.

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"Good. Better. Best"—The Perfect Parenting Dilemma

by DIAN BAUGH-STEITZ

As a child, Jeannie's family motto was, "Good. Better. Best. Never let it rest, until your good is better and your better best." From her earliest memory, Jeannie internalized this message and lived it.

Jeannie excelled. Considered intuitive and artistically gifted, she often felt inferior due to her perceived weaknesses. Throughout her school years, Jeannie was a self-conscious achiever whose high standards led her to often accept accolades while denigrating her performances. Jeannie was unaware that she measured herself by criteria that could never be satisfied or that her peer group, collectively, did not hold their standards as high. Yet, overall, her self esteem was healthy. Jeannie, an only child, felt the support of a loving middle class mother and grandmother who "wanted only the best for her" and routinely emphasized the importance of striving to excel, improving one's lot and, of course, achieving one's potential.

Throughout high school, Jeannie—an exceptionally intuitive problem solver—had a friendly, outgoing personality. She spoke against injustices and came to the aid of others. Then trauma struck. Trapped in a dying relationship, she experienced a brutal reality when she was physically harmed by someone she'd instinctively trusted. She learned to fear relying on her intuition. When Jeannie's primary problem solving tool—intuition—dangerously failed her, her previously healthy sense of high standards became an artificial substitute and gradually structure began to control her life.

By the time Jeannie reached adulthood, her personal library was crammed with self-help books that reinforced the goal of extracting the most from one's human potential. In early adulthood, she married an engineering honor student she'd met in college who was from a family of five children where he lived in a home that was—surprisingly—never less than immaculate.

When she became pregnant for the first time, Jeannie read all the experts' books to help manage her baby's needs, both physically and intellectually. She strove for excellence—particularly in parenting. Jeannie's child grew into an exceptional learner, not surprising, according to Linda Silverman, Ph.D, licensed psychologist and director of the gifted Child Development Center in Denver. Silverman says that gifted children often have parents who also seek excellence in some area. Jeannie proved to be a strong, nurturing mother, but perfectionism became her *bete noire*.

On the first day of middle school, as she watched her oldest son board the bus—shouldering an overload of parental, personal and peer pressure—Jeannie was unaware that the two of them were inextricably locked on a collision course of expectations.

Teenage years give self-consciousness a new meaning for any teen, but perfectionistic families may be sitting on a powder keg. According to Silverman, bright children are inclined to perfectionism because of their abstract reasoning ability which allows clear visualization of flawless ideal images, including their ideal self. Due to powers of analysis, they are also acutely self-aware. The emotional intensity some gifted teens possess comes into play too. Even if a full scale explosion doesn't occur, turbulence is guaranteed.

Perfectionism is not an ideal to be stripped from our society's vocabulary; however, attaining excellence generates many valuable outcomes. Setting one's highest standards embodies an admirable trait that is a basis for greatness. Without talented people who have envisioned sheer perfection, cultures throughout the ages would never have produced brilliant bodies of work in music, art, literature, architecture, scientific discoveries or athletics. The world, nurtured and enriched by these endeavors, needs those talented perfectionists among us.

Yet, gifted children, under certain circumstances, may go to extremes, and, according to Miriam Elliott, Ph.D and Susan Meltsner, M.S.W, in their book, *The Perfectionist Predicament*, youngsters and adults alike often become "specialists" in their particular area of sky-high standards. Their book defined four possible paths.

- Performance perfectionists are scrupulous in their approach to any task undertaken; this group usually contains overachievers and frequently workaholics. They must not just reach their goals, but must surpass them.
- Appearance perfectionists care a great deal about the impression they make on those around them and always need to be seen in a positive light. Many are slaves to diet and

exercise routines while others require the perfect wardrobe for every occasion. Still some fret incessantly about their makeup or some other physical trait—efforts dedicated to making the best impression possible.

- Interpersonal perfectionists may have difficulty working with others, especially those they can't control, criticizing co-workers or volunteers and blaming others when their "meticulously laid plans unravel." This type may heap harsh criticism and demand that tasks be done their way.
- Moral perfectionists may cling tightly to political or religious beliefs they've built up and will not waver at any cost. They have no tolerance for others whose standards are not as rigid (or "correct") as their own and believe violating their moral codes is a sin no matter the circumstances.

According to Elliott and Meltsner, gifted children are most prone to becoming performance perfectionists, but they can assume the characteristics of any or all the types.

Jeannie, while extremely insightful regarding interpersonal relationships, had little inner awareness regarding her own superhuman expectations. Other bright children may not see, not understand, everything affecting them either. As adults, Jeannie's parents were in-the-dark idealists as well.

Parenting excellence is a bit like tightrope walking. Though Jeannie's close-knit family encouraged her to excel, unfortunately reaching for the ring of perfection helped mask her sense of fragility and became Jeannie's substitute for living by her wits. Beyond that, Jeannie could never become perfect enough. Another parental option would have been teaching their child to lower all her standards and imagine only mediocre goals, making failure *and* excellence impossible. Both approaches are fraught with perils.

So, what's a parent to do about this Catch-22 when raising exceptional children? The answer lies in encouraging the pursuit of excellence while teaching an awareness of common perfectionistic traps.

Here are some suggestions for working together through a "perfectionistic parenting dilemma."

Start with yourself. Question the goals you hold for yourself and then your child. Read a book on the topic and don't flinch if you make a few personal discoveries. If you're a superhuman parent, pulled in many directions, you may enjoy reading *Meditations for Parents Who Do Too Much*, by Jonathon and Wendy Lazear.

Recognize the value of seeking our illusive ideals. Feel good about seeking the rainbows of life. Recall with your child the people in history who have worked at achieving excellence and balance and contrast them with others who may have been destroyed by their striving.

Compare people. Compare Ernest Hemingway who committed suicide in the depths of despair to the future of Walt Disney after he was fired from a newspaper and told he had no good ideas. Don't forget the perfectionist Abraham Lincoln who, in the early days, wrote long letters to others describing their faults, but learned not to send them. Lincoln also started in the Blackhawk War as a captain and was demoted to private by the war's end. Still, he held onto his ideals and eventually held a rather impressive position.

Point out the difference between an excellence seeker and a perfectionist. Help the child separate the two: perfection is unattainable, but excellence is within our grasp.

Encourage your child to read about perfectionism. Remember, whether you think your child harbors these traits or not, awareness is the key. An excellent book for youth is *Perfectionism, What's Bad About Being Too Good?* by Miriam Adderholdt-Elliott, Ph.D. Don't shy away from discussing the chapter on suicide.

Help talented children set priorities. While excellence is attainable, finishing first in each task undertaken and in every area of our lives is not.

Remind children of the education gained from failure. Some "famous failures" took risks and won after learning from their attempts. Thomas Edison attempted some 3,000 times to create the light bulb he envisioned; eventually he held 1,093 different patents. Charles Goodyear dealt with many business failures and even went to debtor's prison before he accidentally discovered the vulcanization process that revolutionized the rubber industry.

Let children know that quitting something at the right time is not failure. Share the adage, "Quit while you're ahead," and explain that quitting ought to be done after a goal is reached, not as an escape hatch when he is down-and-out.

Teach children to recognize the red flags of perfectionism. Talk about signposts such as demanding things always be done one way or completing a group project alone because the group can't measure up to unrealistic standards and the more serious signs of depression and giving up.

Teach balance by modeling it. Don't hunker down all weekend—every weekend—with a book. Go to a funny movie, take a day trip to an unusual museum, walk for pleasure and conversation, or hike to a nature habitat to "do nothing" but enjoy time with your child. To model balance, remember what the point of parenting was—to raise healthy children with love.

Finally, over the course of her son's tumultuous middle school years, Jeannie was forced for the first time to face her own and her son's perfectionism. Jeannie eventually learned to choose areas worthy of striving for excellence in and not to impose her high standards on others.

After all, the job she did with her children was really outstanding because she consistently provided nurturing and an understanding environment—even if it wasn't perfect.

Dian Steitz edits the parents' column for IMAGES, the journal of the Indiana Association for the Gifted. This article appeared in the Summer 1994 issue.

TECHNET

No Girls Allowed!

By MELISSA KOCH

It's a noisy sixth-grade classroom, and it's vibrating with energy. Mr. Calhoun announces a trip to the computer lab—half the class will go to the lab with Ms. Karlov, the computer coordinator, and the other half will stay with him. Marka, a bright and generally enthusiastic learner, groans. She has begun to dread these trips to the computer lab because she feels the computer programs have little relevance or purpose and the boys dominate the machines.

Once inside the lab, the five boys lunge for the computers. Ms. Karlov calls out: "All right, everyone! You will need to share a computer." The boys don't move from their claim; they have already begun to manipulate the software and play video games. Ms. Karlov gives basic instructions on computer programming and reminds students to take turns developing their programs.

Marka hesitantly joins Billy, who is writing a code at the computer. When Marka sees what he has done, she becomes interested. With Ms. Karlov's reminder, Billy pushes the mouse toward Marka. Worrying that she will appear dumb, Marka writes a few lines while Billy moves about restlessly in his seat. Sensing his impatience, she grows more and more nervous and reaches a mental block. Billy grabs the mouse from her, opens his own program, and begins to write. Marka settles back and pretends that she doesn't care.

Later, Ms. Karlov lets the students use the math software, and the boys again dominate. After several attempts to discover the reason for a program's error message, Sam shouts his frustration from across the room. Ms. Karlov answers without moving towards him, "Try rebooting." Marka, who is still nervous, has difficulty getting the math program launched, so Ms. Karlov reaches for the mouse and opens the program for her. The boys become very excited about scoring and try to advance to the next level.

At the end of class, Ms. Karlov rewards the three highest scorers—John, Brian, and Seth—with stickers. But for Marka the energy has faded. Girls are often turned off of computers for a host of social, psychological, attitudinal, and environmental reasons. They are socialized to view technology and technically literate people as belonging to a particular culture: the hacker culture. Sherry Turkle, author of *The Second Self*, states, "There are few women hackers. This is a male world."

Women may also see the world of technology as precise and unforgiving, often lacking in creativity and having little connection to people. Lorri Neilsen, director of teacher development at Mount Saint Vincent University in Halifax, Nova Scotia, has discovered that girls often feel that if something goes wrong while they are using high-tech equipment, it is their fault, whereas boys are more likely to blame the machine. Her research also shows that girls and women are less confident than boys and men about their computer abilities.

For girls, many of these feelings of incompetence and alienation from technology start or are reinforced in school. How girls and women relate to technology and the value that they bring to it are often ignored or devalued in education. Once administrators, educators, and engineers begin to understand how girls are getting turned off of technology and to appreciate the different learning style of each gender, we all can make strides in supporting girls and women in choosing computer-related careers and using computers as a medium of expression.

It's a Turnoff

Instead of enticing girls to use technology, educators are turning them off, both subtly and forcibly. In *Failing at Fairness*, authors Myra and David Sadker comment on the short-circuiting of girls' technical abilities that begins as early as kindergarten. They tell of research done two decades ago by Lisa Serbin and Daniel O'Leary

which documented the way teachers gave boys extended directions on how to accomplish tasks themselves while often completing tasks for girls. This same short-circuiting occurs in the kindergartens of the 1990s. Marta Cruz Janzen, according to the Sadlers, observed a teacher's aide instructing the boys how to use a VCR for their project but running the VCR himself for the girls. This is an all-too-familiar situation.

Computers and other high-tech equipment have been used in and considered part of math and computer science, still predominantly male domains. Girls aren't encouraged to go to higher levels in these disciplines by teachers. They are often discouraged by their peers as well. "While there is no sign on the computer room door announcing NO GIRLS ALLOWED," says Jo Sanders, coauthor of *The Neuter Computer*, "females and male students place it there themselves. In *Failing at Fairness*, one sixth-grade teacher comments that she formerly let students choose whether they wanted to use computers during recess. The boys crowded the computer room, while few girls tried to enter what had become the boys' domain. When some girls did try to enter, they were met by rude comments from the boys. The teacher decided to change her tactic and require that each student spend a certain amount of time each week in the computer lab. As a result, the lab became integrated, with almost equal numbers of boys and girls using it.

There are many factors in and outside the classroom that result in girls' being turned away from computers. Such things as the media depicting men as experts in technology, societal expectations of different life goals for boys and girls, the structure of learning tasks, the nature of feedback in performance situations, and the organization of classroom seating are a few factors. Often teachers ask only the boys technical questions, and the boys mock girls' ignorance of technical terms. Also, programming courses are scheduled at the same time as music or art classes, thus discouraging participation. Add to these conditions the facts that the home computer often is placed in the boy's room, not in a common area, and that parents don't usually send girls to computer camp or technology programs, and it is little wonder that girls are turned off. Because these factors are often subtle, they go unnoticed. The gender gap is not closing, according to Jo Sanders, who says it "is a deeply ingrained pattern on the part of teachers and kids." Gender bias penetrates all aspects of society.

The Game's the Thing

The gender bias of the computer-game market contributes to girls' lack of interest in computer games and inhibits their access to computer technology. These games introduce children to the basic technology, allowing them to interact and explore. Kids who play the games have an advantage over kids who don't. Currently, the majority of computer-game players are boys. Many researchers argue that this is due to the types of games on the market; the software appeals to boys rather than girls. Boys are more attracted to products that depict violence, emphasize competition, and demand strong hand-eye coordination. Most games written for boys contain stereotypes of masculine and feminine. While some girls play with these products, many feel alienated.

In the past, many of the software designers were male; thus they created games that appealed to boys. This situation is changing as more female designers enter the industry. However, most publishers, the controllers of the industry, fail to recognize the gender bias in their products, not to mention the female market potential. Heidi Danglemaier, a computer-game designer in New York City, has made it her mission to make publishers aware of gender bias and to involve females in digital interactive media. "When we as an industry truthfully believe gender differences exist," she says, "we will make the first step toward creating videogames for girls and boys."

Maria Klawe, director of computer science at the University of British Columbia and a noted authority on gender and computers, believes that computer games are a good way to entice kids into using computers. "Currently, it is the boys' culture that is addressed in computer games," she says. "It is important to include girls' culture as well. Computer games can be intellectual activities that help children learn by making learning more attractive to them."

Let's Go On Line

What about telecommunications? Do walking through the Internet and visiting sites and

people along the way appeal to girls? Given the communication aspect of telecommunications and the ability to make on-line activities purposeful, this field would appear to appeal to girls. Some preliminary studies on girls and telecommunications indicate that having telecommunications as a collaborative activity in classrooms actually heightens girls' interest in computing. In addition, gender differences in the types of on-line activities that appeal to boys and girls are evident. While boys gravitate toward games, girls use e-mail and USENET. From her work on the Learning Connections Project, Lorri Neilsen observes, "[Girls] used newsgroups and listserves as well, but one-to-one e-mail was their primary use. On listserves, they tended to lurk."

Tracy LaQuey Parker, author of *The Internet Companion*, says that while the Internet began as primarily a male domain, that is changing. "The Internet is a community and an open collection of resources for everyone. Because the variety of groups on the Internet is growing, there are attractions for girls and boys." The growth of women's networks and on-line groups such as Systers and Women's Wire are indicative of the on-line space women are creating for themselves. Because of the relative youth of this field, several educational research institutions plan to conduct research on network use by girls and women. According to a recent study by Alnaaz Kassam of the Ontario Institute for Studies in Education, "It is the active encouragement of female participation and a reflection of female needs and interests that will bring about any lasting improvement in the inclusion of females on an equitable basis."

Wake-Up Call

Look around your schools and homes. What signals about gender are you sending to the children you encounter? Do you see both male and female gender learning styles being valued and addressed? Awareness is the key.

Exposure to technology Girls need more exposure to technology, particularly during the critical middle-school years, when they often turn away from science, math, and technology in droves. It's important for kids to be introduced to computers in a variety of capacities before they reach puberty, when students often resist venturing out of their prescribed gender roles. Katherine Hunt, computer specialist for grades kindergarten through eight at Nueva School in Hillsborough, California, has this advice for teachers: "Give kids as much exposure to computers as you can. Do different types of activities. Open-endedness in projects engages girls, thus leading to their success." Parents must be included in the process of encouraging girls to explore and become comfortable with high-tech equipment. Teachers should invite parents to conferences to discuss their daughters' use of technology and to project nights at the school.

Preferences Girls often prefer collaborative to individual work. Teachers can help by setting up their classrooms and designing activities to promote cooperation. Girls tend to demonstrate a learned helplessness in regard to technology, but by teaching them to do things themselves rather than doing things for them, teachers can foster girls' comfort and confidence in using technology. Whereas boys tend to tinker, girls usually want to accomplish a task when they sit down at a computer. While learning to use time wisely is an important skill, tinkering, on the part of both girls and boys, often leads to new discoveries and a better understanding of the technology.

Centering instruction on programming appeals mainly to boys. Girls respond better when applications, rather than programming, are stressed. Girls are fully capable of programming, although they are often turned off by its apparent regimented nature. Teaching programming as a creative process with many solutions can entice girls, as can integrating computers into the curriculum and using them for a variety of activities. Associating computers only with math and science may turn many girls away. For example, girls can transfer math anxiety to computers if they are placed only in the context of mathematics. Instead, teachers can use computers in a variety of subject areas (reading, history, literature) and for a variety of purposes (word processing, research, design).

Appreciating both genders In a study conducted by the Center for Children and Technology in New York City, researchers asked both male and female technical experts to imagine future technological developments in their field. Their responses indicated clear gender differences in perceptions of technology. The women envisioned devices that connect people, improve communication and collaboration, integrate public and private lives, and improve upon existing technologies. Many talked about portable devices. The men imagined unlimited power, tremendous speed, and absolute knowledge. The men were fascinated with the equipment itself and sought major technological advances. Both sets of values and concerns are needed. The male gender has greatly advanced technology, although sometimes forgetting the needs of the user. On the other hand, the female gender focuses on the users and improving current technologies. Appreciation for both genders' learning styles and addressing them in instruction will help draw girls into technology.

Although teaching to a female-gender learning style is important, it is easy to fall into the equity trap. Jo Sanders explains that to attract girls to technology, teachers often feel they must appeal to sex-role stereotypes, thus reinforcing the status quo. However, if an attempt is made both to attract girls to technology and to broaden their horizons, they will probably not respond. "The only solution I know to the equity trap is the incremental one of stretching girls' interests a little at a time," Sanders concludes.

Choosing software Software should be reviewed for gender bias and stereotyped sex roles. Today, with many women at the helm of educational software companies, most of the educational software products appeal to girls because of their purposeful nature. "However, many educational software

developers want to take advantage of video game appeal, such as in *Mathblaster*," remarks Maria Klawe. "But, for the most part, girls are interested in educational software, since it has purpose and is often collaborative." Klawe thinks it is a positive sign that "women have participated at least equally in the leadership in this field."

For teachers who are concerned about gender bias in software, Jo Sanders offers this advice: "By all means, use any software that works and that isn't insulting to get the girls to the computer, but then introduce them to all the other challenging and rewarding ways in which people use computers." Some developers are working on software with the purpose of motivating girls to investigate technology. Developers at the Center for Children and Technology created "Imagine" after interviewing children about new equipment they would like to create for themselves. "Imagine" lets kids design machines and animate the parts to show how they work. The purpose of the software is to validate girls' interests in design without needing previous knowledge of math and science. The design tool facilitates mental tinkering and spatial relationships to encourage girls to invent things.

Role models Because role models are critical but are often absent from girls' lives, several programs have women from industry visit girls' classes to discuss their careers. The instructors of these programs also serve as role models for the girls. Tracy LaQuey Parker, a role model for all girls and women in computer science and networking, believes in the power of role models. "There aren't a lot out there. I think [they] are very important. Susan Estrada, an Internet expert and author of *Connecting to the Internet*, is my role model. Seeing her do things makes me feel I can do it."

Do these programs and efforts help? In response to visits by role models from Women of Vision at the Technology Museum in San Jose, many girls write letters saying they've changed their minds about science and math and are considering careers in these fields. The Computer Equity Expert Project trained 200 educators from across the country. As a result of this training, at a school in West Virginia, the computer club went from five percent girls to 53 percent girls in about a year. At a school in Montana, in a year and a half the percentage of girls enrolled in programming went from none to 31. Furthermore, in a national field test of *The Neuter Computer* by Jo Sanders, girls' computer participation increased by 144 percent in only one term. So the programs do work.

Energy and vision are needed from all gender perspectives. These efforts at recognizing gender bias and seeking solutions can make females active participants in technology. The female perspective, which many educators have ignored or devalued until now, is, ironically, at the heart of current struggles in technological development: improving technologies for the user, making better communication tools, and creating collaborative environments. It's up to educators and anyone concerned with education to make the effort to involve a vital resource, the female gender. Can we afford not to?

Ms. Rose's noisy sixth-grade students are bursting with energy. Some are working with Ms. Rose on measuring the height of various playground objects; others are using spreadsheets and creating charts to describe the measurements they've taken. While Ms. Rose is on the playground with several of the students, Mr. Vaille remains with other members of the class to answer questions and to make sure that each two-person group receives ample time on one of the six computers.

Mr. Vaille checks the operation of a computer that Marka said was giving her trouble when she tried to open her multimedia report for her technology design class. He shows Marka the cause of the problem and lets her operate the mouse to fix it. Marka shows Mr. Vaille her presentation. She has worked on elements of it at home on the family computer, incorporating sounds that her brother makes playing the electric guitar.

Marka, along with several other girls in the class, also attends all-girl classes conducted by Girls Inc. After meeting several women mathematicians and computer scientists at Girls Inc., they decided to research women in math and science. In the classroom, they have posted pictures and biographies of them. Marka and Shirabe are excited about next week's visitors, two computer scientists from a local company, Ms. Martinez and Mr. Carter. The energy in this room stays high.

For Further Reading

Failing at Fairness, by David Sadker and Myra Sadker (Charles Scribner and Sons, 1994)

Mothers and Daughters of Invention: Notes for a Revised History of Technology, by Autumn Stanley (Scarecrow Press, 1993)

The Neuter Computer: Computers for Girls and Boys, by Jo Sanders and Antonia Stone (Neal-Schuman Publishers, Inc., 1986)

The Second Self: Computers and the Human Spirit, by Sherry Turkle (Simon and Schuster, 1984)

Technology Programs for Girls

Girls Inc. teaches both SMART (science, math, and relevant technologies), developed in 1985, and Eureka at six sites in the United States. Eureka, which engages girls in math, sports, and technology, was developed by Alice Miller, director of Women's Studies at Brooklyn (New York) College. In both curriculums, role models in industry meet with the students. Contact: Girls Inc. National Resource Center, 441 West Michigan Street, Indianapolis, IN 46202; 1-800-374-4475.

EQUALS, at the University of California at Berkeley, provides teacher training and curriculum materials to promote female participation in mathematics courses and math-based careers, such as computer science. Contact: EQUALS, Lawrence Hall of Science, University of California, Berkeley, CA 94720; 510-642-1823.

Screen Play, located in Hillsborough, California, conducts computer work-

shops for parents and children; its efforts are focused on girls and women. "Screen Play gave me a chance to work with computers and people," says Lily Rosenman, 13, a former student of Screen Play and a current aide for the program. "Screen Play has increased my interest in computers." Contact: Screen Play, 500 Remillard Drive, Hillsborough, CA 94010; 415-343-5133.

The Women's Education Equity Act Program (WEEA) supports equal education rights for females. Its catalog contains gender equity material for all grade levels. Contact: WEEA, 55 Chapel Street, Newton, MA 02160; 1-800-225-3088.

Jo Sanders, director of the Gender Equity Program at the City University of New York's Graduate Center, has written several articles and two books on activities to entice girls to use computers. See *The Neuter Computer: Computers for Girls and Boys*, and *Lifting the Barriers* for strategies and resources for increasing girls' participation in math, science, and computers. Contact: Jo Sanders, Center for Advanced Study in Education, CUNY, New York, NY 10036; 212-642-2672.

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How to Improve Academics? Re-examine Athletics

by STEVE SCHROEDER-DAVIS

Research for the past 30 years has consistently demonstrated that athletes are the most respected group of students in school, while scholars are among the least, ranking just above "dropouts," according to ratings of popularity.

The major cause and effect of these related phenomena is the social preeminence of athletic competition over all other forms of academic and artistic endeavor, whether "competitive" or not.

This puts those of us wishing to effect school reform in a difficult situation. We have argued that scholarship should be (at least) the equal of athletics in schools and communities, we have instituted academic challenges that simulate athletic competition, and we have tried riding the bandwagon of athletics with "scholar-athlete" awards, all in an effort to place academics and the arts at a level somewhat comparable to that of school athletics. This philosophy runs the risk of alienating coaches, athletes and communities, and consequently never reaching kids.

All to little visible effect. Perhaps the time has come to reassess athletics in the light of new research—not *in an effort to eliminate sports*, but with hopes that a realistic look at the mythologies of sports might put them into perspective and allow other endeavors and accomplishments to share the spotlight in our schools and communities.

Cultural Myths

In *Lessons of the Locker Room: The Myth of School Sports*, authors Andrew Miracle and Roger Rees list the cultural "myths" (which they define as "unexamined assumptions") related to high school athletics. It is generally believed that sports participation will do any or all of the following:

1. Build character
2. Prevent delinquency
3. Reduce prejudice
4. Promote cooperation
5. Motivate students academically
6. Lead to improved academic opportunities
7. Provide role-models for youth

In briefest essence, their exhaustive review of research indicates that *high school athletics guarantees none of these benefits, and may encourage the opposite.*

To be more precise, all these assumptions are context-based, depending on and varying with the dynamics occurring between the individual athlete and school and community in which the sport is played. Some participants will be motivated academically (perhaps to stay eligible), others will neglect their studies to focus on their sports "career," some will enjoy the teamwork required in certain sports, others will become obsessively competitive.

Further, other forms of intense engagement such as community service, speech and drama clubs, and yearbook and newspaper work—which offer the same potential benefits (enhanced self-esteem, academic incentive, and/or teamwork), often without the potential dangers inherent in sports—are ignored or trivialized due to the dominance of athletics.

This is not to say that sports are not valuable, or that athletes can't also be involved in other school activities; it is simply that there is nothing intrinsic to sports that should make it preferable to the myriads of other worthwhile curricular and extracurricular offerings available to kids in school.

Yet an examination of most Minnesota schools and communities will demonstrate that our emphasis has been extremely one-sided; adults have made it very clear that athletics is the most prestigious and worthwhile pursuit available. Why?

Why the Emphasis on Sports?

This isn't merely an issue of which activities our children pursue after school. Our culture has emphasized sports so militantly for so long that we have disabled our children not once but twice; many are afraid to consistently demonstrate scholarship, and they are woefully misguided relative to the actual opportunities sports provides.

My research of over 9,000 respondents to the Minneapolis Star-Tribune's February, 1993 "Mindworks" column indicates boys from kindergarten through grade nine would prefer to be the "most athletic" in their class rather than the "most intelligent" (2,312 to 1,746). Many list "popularity" and "opportunities to become rich and famous" as their reasons for choosing athleticism.

While it is no myth that sports is an avenue to popularity in high school, that popularity is extremely short-lived, ending for most upon graduation. And the likelihood of a professional sports career is bleak for high school athletes: 4 in 100,000 for white males, 4 in 1,000,000 for white females, 2 in 100,000 for black males and 4 in 100,000,000 for black females, as estimated in *Lessons of the Locker Room*. For those few who do make it, the average career is about 5 years.

There is nothing wrong with aspiring to a sports career, whether successful or not. The problem is that the exclusive and reverential orientation towards sports exerts such dominance, especially among males, that it detracts significantly from both curricular and extracurricular pursuits that are more scholarly and ultimately more beneficial to the individual and society.

Adults continue to tolerate and encourage school and community climates that actively discourage scholarship while simultaneously encouraging a variety of myths relative to athletics.

What To Do?

This must stop. Physical prowess is simply not an attribute with much staying power, nor is it of any particular value outside the stadium.

Adults, especially school officials, must make it clear through highly visible *actions* that

- school work comes first
- all forms of productive achievement—including, but not limited to, sports—are valued.

How might this be done? Here are two modest suggestions.

1. Either eliminate athletic pep fests or genuinely honor other activities with pep fests.
2. Either tear down community billboards proclaiming "Home of...(name of athletic team/accomplishment)" or add academic and artistic distinctions to these signs.

Until this is done, our attempts to improve the climate for scholarship in our schools will be of little significance to students, who must rely on adult leadership to establish the values and priorities in our culture.

Steve Schroeder-Davis is president of the Minnesota Council for the Gifted and Talented.

Who's Afraid of Acceleration?

by WENDY CHRISTIE

It is fairly safe to say that changes in education are generally greeted with scepticism. And the Government's new policy in New South Wales is certainly no exception. A century's experience of the chronologically organized lock-step system of schooling has finally come under scrutiny and the myth of equal opportunities resulting in equal outcomes has consequently been dispelled.

But how to cope with and act upon this knowledge is a widespread problem for teachers. Many feel that enrichment experiences are sufficiently stimulating for the gifted, while others believe they need more. Any conflict generated by what seems to be a dilemma, however, is preferable to our blind acceptance of inadequate provisions in the past.

The "Same Age-Same Stage" Myth

For too long all children of the same age were treated as having the same learning needs. In fact, according to Dr. Jessica Milner Davis, eminent consultant on gifted education, grouping children solely on the basis of chronological age is almost as foolish as grouping them on the basis of shoe size!

Yet, grouping them on the basis of age has been the foundation of Australian organizational practices for the past one hundred years. And, while most educators would agree that it makes sense to allow gifted learners to progress at a pace commensurate with their abilities, it would seem that many teachers and members of the community in general still have reservations about the appropriateness of accelerated progression for children who learn faster than their age-peers.

Lovecky (1993, 39) highlights the irony of this contradiction by commenting that no one these days would expect to be able to meet all the educational and developmental needs of a child with an IQ of 50 in the regular classroom, but they do expect to do just that with children with IQs of 150, though both IQs are equally different from the norm.

Acceleration and Enrichment: Are They Opposed?

Painter's assessment of the situation in Great Britain is that gifted students in regular programs are subjected to a straight-jacket curriculum that is a feature of factory-style schooling (Painter, in Selway, 1992, 31; Delisle, nd, 1)! Consequently, the intention of recent State policy documents is to liberate young learners from the stifling constraints of the past.

Yet, the debate over "the best way" is still unresolved. Contention over the relative merits of acceleration and enrichment has existed for over seventy years. Indeed, Southern, Jones and Stanley (1993, 400) attribute the dichotomy of views to the varying assumptions held by individuals about both the nature of giftedness and appropriate ways of nurturing it.

Critical of the misguided notion that acceleration and enrichment are antithetical and mutually exclusive, these researchers suggest that both types of provisions are really legs that support the same chair (Southern, Jones and Stanley, 1993, 387). In fact, appropriately designed enrichment activities are actually a form of acceleration, as they introduce the learner to more advanced content.

Unfortunately, however, many enrichment activities in schools simply amount to more of the same, and gifted learners, if not sufficiently challenged, may mistakenly develop the idea that all learning is easy (Bragget, 1992, 9). What parents and teachers seem to be uncomfortable about, though, is not the child's embracing more complex knowledge and skills but her being separated from her age-mates. Indeed, a range of arguments in favor of not accelerating has been put forward over time.

Why Are We Afraid of Acceleration?

Opponents of the strategy are inclined to associate the term "acceleration" with the idea of hurrying through the curriculum to the detriment of a student's overall education. Well-meaning parents and educators worry that children will be denied their youth, that gaps will occur in their knowledge and that students will have reduced opportunities for leisure. Yet, failure to accelerate when appropriate has also been proclaimed as damaging (Vernon, Adamson and Vernon, 1977, 144). Sanderlin and Lundy (1979, 117) and Sanderlin and Lundy (1979, 98) suggest that for many years schools actively decelerated the gifted by failing to acknowledge their learning needs.

So, where do our teachers stand on the

issue? The answer is difficult to ascertain, though Bailey (1993, 117) comments that acceleration appears to offend many teachers' and parents' commonsense notions of what is good for children. Clark (1989, 203) believes that teachers simply prefer the convenience of lock-step grade placement or are critical because they are ignorant of the research. Indeed, the strategy is often condemned by people with limited experience of it (Bailey, op.cit., 117). The bottom line, however, is the fact that the provision is neither good nor bad. It is the learner or learners for whom the option, in one or more of its many forms, is being considered that determine the appropriateness of the strategy.

The Facts

First and foremost, acceleration does not mean, or should not mean, the advancement of a learner through grades or stages of the curriculum at such a rapid pace that he or she is struggling to keep up or is forced to abandon other interests. The intention of flexible progression is that capable students have the opportunity to work at an appropriate level of challenge and at a personally appropriate pace, rather than having to "mark time" while less able children master content. Hence acceleration means different things to different learners. Continuous progression means having access to advanced materials without the fear of their having been earmarked for a particular year group. Yet, the more radical form of acceleration, namely grade-skipping, is what is usually thought of when the issue is raised in the staff room.

For some children movement ahead of their peers may need to occur more than once. Consider the example of Emma (name changed), a student known to the writer, who was grade-skipped from Year 3 to Year 5, as she had quite obviously mastered the skills outcomes for a student completing Stage 2.

Again, during her secondary schooling, Emma moved ahead in geography, where she maintained her rank as first in the class even in the higher grade. She still found time to play the trumpet and piano accordion and compete on inter-school debating and sporting teams. As well as this, she built a solar car and learned to compose music using a Macintosh computer through the school's independent research program. Contrary to popular opinion, true accelerants, who identify themselves through their exceptionality, will flourish rather than flounder if allowed to control their own learning.

Research concerning the advanced mental age of students of high potential very definitely verifies the notion that bright or precocious children need to be allowed to move ahead of their same-aged peers. In support of this indication, Southern, Jones and Stanley (1993, 397) outline a number of benefits of accelerated progression for selected students. These include:

- Less emphasis on repetition and drill
- The achievement of a closer match between the level of instruction for the student and his or her level of performance
- Appropriate recognition of mastery of previously acquired knowledge and skills
- Increased opportunity for academic exploration as a result of having more time to investigate personally relevant courses
- Increased productivity at an early age and increased time for specialization and careers
- More exposure to intellectual peers and greater likelihood of healthy social self-esteem
- Lower probability of monotony and boredom
- Reduced probability of capable students dropping out
- Increased motivation to achieve
- Greater likelihood of the development of appropriate work habits
- Less chance of academic underachievement

A meta-analysis of 26 studies on the effects of acceleration on learners led Kulik and Kulik (1984, 84) to conclude that accelerated students showed almost a year's advancement in terms of skills over their equally talented same-aged peers. Furthermore, it was demonstrated that accelerated students continue to out-perform their intellectual equals who remain with their regular cohort. In addition, there would seem to be no evidence to suggest that social and emotional problems arise when programs are well-planned and carefully monitored (Gross, 1993, 140). According to Gagne (1981, in Southern, Jones and Stanley, 1993, 399), any difficulties encountered by an accelerant would probably have occurred with or without acceleration!

Non-acceleration causes school sickness. The simple truth in Bragget's view is that a child who is an accelerated learner needs an appropriate acceleration program (Bragget, 1993, 121). Such a program allows the learner to progress on the basis of developmental readiness, rather than

imposing a constraining lock-step structure, the folly of which is illustrated by extracts from two case studies compiled by the writer.

It was not surprising that Louisa (not real name) in Year 2 began to develop migraine headaches and baulk at going to school. Before long the headaches became so intense that her parents sought help from a psychiatrist. It was soon discovered that when the child worked ahead in her Maths book, the teacher told her to rub out the exercises, only to do them again a week later. When asked to write two bars of music, Louisa, already at that stage a conscientious piano student, wrote eight. And was scolded for disobedience!

Now consider the dilemma of eight year old Luke (also a pseudonym), whose excuses for wanting to remain at home in the first week of term ranged from an earache to a "tummyache" to exhaustion! "I don't want to learn the things I already know. She (the teacher) doesn't care that I'm good at numbers. We just do the same old things over and over…and I don't like her cause she shouts!" When asked what he did want to find out about, he pondered: "I want to know how the planets got here and what it will be like in the year 2000 and the speed that electricity goes through wires and how it's made…I don't want to go to school!"

In the cases of Luke and Louisa there is an obvious lack of congruence between what is happening in the classroom and what excites the children. Failure to acknowledge their learning needs has resulted in their intense distress.

What the situation amounts to is that early identification of learning needs is vital. Gifted children, like all others deserve appropriate learning experiences. When international guidelines for acceleration published by the Board of Studies are used as a means of determining readiness, placing an advanced child at an advanced stage on the curriculum continuum is merely commonsense (Board of Studies, NSW, 1993, 6).

And in the words of a current accelerant at the school where the writer teaches:

> *I don't for a moment wish I was back where I was. If anything I'm not missing out but gaining, as I'm exposed to more adult ideas at an earlier age. For me the challenge is more important than the outcome. It's not that I want to get to the end faster. The meaning is in the journey.*

It seems that educators are more concerned with the logistics of facilitating acceleration rather than with the actual concept of fast-paced, advanced-level learning. Even if the structural organization of an institution prevents a student from moving out of the regular classroom, the options of following an individualized program or participating in a mentor scheme can still provide challenge at an advanced level.

The reality, as Stanley (1985, in Davis and Rimm, 1989, 104) sees it, is that educational non-acceleration for the gifted is an international tragedy. Can we afford to risk limiting the potential of our most able students simply because we are too afraid or near-sighted to remove the barriers that realistically impede their progress? There is plentiful evidence that acceleration is advantageous. There is only hearsay that it is not. So, by allowing the gifted to go ahead, we have nothing to lose but our biases.

The list of references for this article may be obtained by contacting the *Communicator* editor.

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33rd Annual CAG Conference

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OPENING THE WORLD TO GIFTED STUDENTS
CAG 1995

The Rain

Rain, oh rain, why do you fall?
For goodness or badness?
Why do you make the mud slide
off the hills?
Rain, why do you make thunder
and lightning?
I love the rain.
But just a little at a time

—Lara Stampler, Age 6
Mirman School

Poems and Penguins

Poems come on big Emperor Penguins
They waddle from your brain
To your hand
To your pencil
To your paper
Until you write it down.
And then the penguins
Toboggan down the mountain
Of poetry.

—Jacob Sendowski, Age 9
Mirman School

Rogers

Continued from page 1

case study, but what practices were employed to manage Bob's gifted education? Again, use a star to designate any that research would suggest are *inappropriate* for gifted learners.

1. _____
2. _____
3. _____
4. _____
5. _____

Case Study Three: Jane

Jane was tested at age four when she was found to be reading at the third grade level with an accompanying high IQ. She was placed in first grade at age 4 1/2 years. From grades 1-5 she was regrouped with other highly able students in her grade level for advanced instruction in reading and mathematics.

In grade 7 she took the SAT, scoring well, and was invited to participate in an accelerated mathematics program at the local college, whereby she would receive two years' high school credit for each year of program participation.

In high school she took advanced or accelerated classes in English, mathematics, science and social studies. She was allowed to work at her own pace in German, receiving three years' credit in one year's time.

In her senior year she took the Advanced Placement courses offered at her school in English Literature and Calculus, scoring 5's on both AP exams.

When admitted to the university, she was given 10 credits of mathematics and 6 credits of English for these scores. She took additional exams at the university, receiving another 23 credits in foreign language and music theory.

Problem: So...what practices were employed in managing Jane's gifted education? (Remember to star any practice you think *does not* have research to support it as an appropriate option for gifted learners.)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Case Study Four: Dave

Dave always wanted to be the best at what he would do, so even though he was already reading and thinking at advanced levels, his parents had him enter school at the "appropriate" chronological age. He was regrouped with other highly able students for enriched instruction in read-

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ing and math while in elementary school.

In grades 3-5 he was also removed from his regular class along with other bright students to participate in interdisciplinary enrichment units in the sciences and humanities.

In middle school he was placed in "advanced" sections of math, social studies, science and English, continuing with advanced sections in mathematics and English throughout high school as well.

At the same time, in some academic subjects, particularly social studies and science classes at the high school level, Dave learned in heterogeneous classrooms, primarily through mixed-ability cooperative learning, in which he and his fellow group members would divide the work on a task they shared, such as answering textbook questions or writing up a lab report.

He took AP courses and exams in American History and English Literature, receiving 6 credits in these subjects when he enrolled in college.

In his senior year, Dave participated in a college course on Rhetoric offered at his school before the school day began, receiving 5 credits for it when he was admitted to college.

Problem: What practices were employed in managing Dave's gifted education? (Also, put a star next to any practice you think does *not* have research to support it as an appropriate option for gifted learners.)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

PROBLEM TWO: Hypothesizing About Research

At this point, you probably have some stars next to the practices you have identified. If so, you are ready to formally state your hypothesis about the effects of this (these) practice(s) on gifted and talented learners. As a hint, I can tell you that only two of the practices have no research to support them, so you may want to review your starred choices and then make your hypotheses below.

The form might be something along the line of "Grade skipping a gifted learner has no effect upon academic achievement" or "Grade skipping a gifted learner has a positive (or negative) effect upon academic achievement." Go ahead and make your hypotheses now, before we move ahead with what the research *really* says.

Hypothesis One: _____

_____

_____

_____

Hypothesis Two: _____

_____

_____

_____

PROBLEM THREE: Interpreting The Research on Gifted Practices

Since 1982 there have been 13 syntheses of research on such practices as ability grouping, cooperative learning and accelerative options. Not all of these syntheses have focused only on the effects of such practices on gifted learners, but a consistent picture has been painted across them of what effects there are for the gifted and nongifted. All but one of these syntheses have used the metric of Effect Size to describe learner outcomes. That is, the mean gain score of the "treatment group" (the group who were ability grouped or accelerated or ...) *minus* the mean gain score of the "control group" (the group who were taught in traditional, heterogeneous classrooms) *divided by* the standard deviation of the control group (the variation of the control group's individual scores from its mean score.)

Such an Effect Size allows the synthesizer to average very diverse research studies together using their "common denominator" of Effect Size to estimate a general direction of effects across the research body. Generally, educators are looking for a "substantial classroom effect"—around an Effect Size of +.30—before determining that a strategy makes a difference for learners. Such an Effect Size could be translated as the "treatment group" scoring approximately one-third of a grade equivalent school year's ***additional*** achievement over the "control group."

With the concept of Effect Size under our belts, let's take a look at some of the Effect Sizes the 13 research syntheses reported for gifted and talented learners as displayed in the table.

Having now studied this table of Effect Sizes,

Effect Sizes Research Syntheses

Full-time placement in Special Gifted Program, elementary	49
Full-time placement in Special Gifted Program, secondary	33
High Achievers Track—Differentiated Curriculum K-12	30
High Achievers Track—No Documented Differentiation K-12	12
Cluster Grouping Within Regular Classroom	62
Enrichment pullout—directly connected with regular curriculum	65
Regrouping for Specific Instruction, Math (elementary)	79
Cross-grade Grouping, Elementary-Reading	45
Cross-grade Grouping, Elementary-Math	46
Student Team Learning Cooperative Learning (no gifted studies)	30
Johnson & Johnson Mixed-Ability Cooperative Learning	0
Early Entrance to School	49
Grade Skipping	46
Nongraded Classrooms	43
Curriculum Compacting	83
Grade Telescoping	83
Concurrent Enrollment	22
Subject Acceleration	59
Advanced Placement	27
Mentorship	47
Credit by Examination	56
Early Admission to College	30

how did your hypotheses come out? Did you know what the research says? If not, you may wish to read further by studying the actual research syntheses from which these sizes were calculated. You'll find the list of references at the end of the article as well as a listing of the "correct" hypotheses.

PROBLEM FOUR: Explaining Why We Don't Listen to Research

Of course all of us can list at least five reasons why we personally don't listen to the research when we make educational decisions for gifted learners, including:

"I don't have time to spend reading these dry articles in the library."

"Most research is garbage and not be believed anyway."

"None of the research I have read matches what goes on in my classroom."

"I can't understand what the research tells me I should do"

"Experience is the best teacher—who needs research?"

True, most research studies have flaws and limitations, but the recent ability of synthesizers to consider a whole body of research and make general estimates of effect may now make it, flaws and all, a helpful tool for educational decision makers.

Whatever our reasons have been in the past for not paying attention to research, we now can and should do it on a regular basis.

If I have convinced you that it's worth your while to listen to the research, then here are four steps to take to become an up-to-date, good consumer of the research—none is expensive or time-consuming and all ensure your place as a good consumer.

Step One. Subscribe to a blind-reviewed research synthesis journal, such as Review of Educational Research, published quarterly by the American Educational Research Journal. In each issue will be 5-7 reviews of current research on different instructional strategies, materials, and programs, and in most cases the new techniques of meta-analysis or best-evidence synthesis to calculate Effect Sizes will be reported.

Step Two. Read the "professional" literature about educational innovations *critically*, after consuming the real research synthesis journal.

It is important to keep abreast of the professional journals such as Educational Leadership, Kappan, NASSP Bulletin, etc., as they attempt to "translate" the real research. Some of their attempts are very helpful; some are just plain inaccurate and misleading. You will need your best analysis, synthesis, and evaluation higher order skills to sort the good from the bad.

Step Three. Become a faithful reader of a gifted journal devoted to reporting the research on instructional and curricular innovations for the gifted. There are several from which to choose.

Step Four. Be suspicious the next time an in-service speaker or district consultant, who has great plans for "transforming" or "reforming" your school and programs, tells you, "The research says." Maybe it does, but maybe it doesn't!

Answers

Case Study One: Kay
- Early entrance to school
- Independent study
- Grade skipping
- Ability grouping for enrichment
- Tracking
- Subject Acceleration
- Concurrent Enrollment

Case Study Two: Bob
- Nongraded classroom
- Grade skipping
- Tracking
- Concurrent enrollment

Case Study Three: Jane
- Early entrance to school
- Grade skipping
- Regrouping for specific instruction
- Concurrent enrollment
- Ability-grouped classes for enrichment and for acceleration
- Subject acceleration
- Advanced placement
- Credit by examination

Case Study Four: Dave
- Regrouping for specific instruction
- Pullout for enrichment
- Ability-grouped classes for enrichment or acceleration
- Mixed-ability cooperative learning
- Advanced placement
- College-in-the-schools

All hypotheses that stated "There will be a substantial, positive effect on academic achievement for gifted students who are " would be correct, except for Concurrent Enrollment and Advanced Placement (where there was "a small positive effect on academic achievement") and for Mixed-ability Cooperative Learning (no effect on academic achievement.)

The worrisome thing about these hypotheses is that for each Effect Size reported, equally gifted students, the control groups, were left in traditional, mixed-ability classroom and did not make the .30 or above academic achievement gains they were capable of making.

Karen Rogers, Ph.D., is an assistant professor in the Gifted and Special Education Program of the School of Education, Professional Psychology, and Social Work at the University of St. Thomas in St. Paul, MN.

A list of references for this article may be obtained by writing the Communicator editor.

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COMMUNICATOR

FOCUS ON BRAIN RESEARCH

How Sleep and Stories String and Shape Our Memories

by ROBERT SYLWESTER

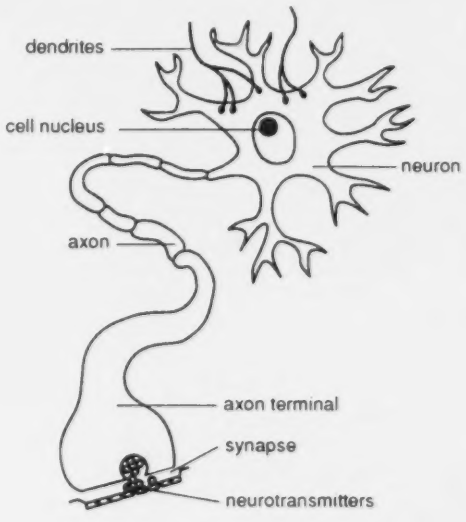
Why do we devote a third of our life to sleeping and dreaming, several hours a day to mass media, and much of the rest of our waking day to informal conversation? Why do remembrances of previous experiences suddenly pop up in our mind while we're listening to stories that other people tell? Why do parables and songs provide us such a rich lore of moral and ethical information? Why do our brightest students take the leading roles in classroom discussions?

A growing number of memory researchers believe that the answers to such questions help to explain how our brain develops, maintains, and edits our long-term memories. Although only limited research evidence currently supports this thesis, the basic idea has a ring of rightness about it that further research should confirm. For educators, the theories provide a fascinating new view of the role that storytelling activities play in the maturation of a child's brain—and suggest intriguing applications to talented and gifted education.

This article (1) presents a functional explanation of the biology of the learning/memory process (as scientists currently understand it and theorize about it), and (2) discusses the complex personal and cultural dynamics that appear to maintain the system. It will focus especially on factors that affect memory development and maintenance in talented and gifted students.

How Memory Networks Develop

Our brain processes sensory/cognitive/motor information through a network of 100 billion intricately connected neurons. A neuron contains (1) a cell body that synthesizes one or more of the 50+ types of neurotransmitter molecules that carry chemical information from neuron to neuron, (2) a number of short finger-like dendrite extensions that bring information into the cell from surrounding neurons, and (3) a longer axon extension that carries information from the cell to nearby or distant areas of our brain or body.



Continued on page 28

Awards Presented at CAG Conference

Ron Fontaine and Marian Diamond were the receipients of awards at the 33rd Annual CAG Conference held last month in Oakland.

Dr. Diamond, educator, brain scientist, and Director of the Lawrence Hall of Science, University of California Berkeley received an Award of Recognition for contributions made to gifted education.

Ron Fontaine, a past president of CAG, was the recipient of an Award of Achievement for dedicated service and continued contributions to the education of gifted students.

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CAG encourages all interested parties to submit articles for publication. All submissions will be given careful consideration. Photos and camera-ready art work are particularly desirable. Student work should be accompanied by teacher's name and school. Send all material with your name, address, and phone number to Jean Drum, *Communicator* Editor, 7822 Belgrave Avenue, Garden Grove, CA 92641. You may phone Ms. Drum at 714/892-1745.

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CALENDAR

May 6, 1995
Intensity in Gifted and Talented Children
California State University, Sacramento, Student Union. For registration information, contact 916/421-5768 evenings.

May 13, 1995
Gifted/Talented Hispanic Child Conference, *Road to Success*. Thomas Starr King Middle School, 4201 Fountain Ave., Los Angeles. For information, contact 213/625-6500.

June 2–4, 1995
CAG Board Meeting, Fountain Suites Hotel, 321 Bercut Dr., Sacramento.

June 3, 1995
Summer School for Gifted and Advanced Learners, University of Southern California. Student Institute: July 5–14; Educator Institute: July 10–12, July 12–14. For information, contact 818/884-4014.

July 30–August 4, 1995
11th World Conference on Gifted and Talented Children, *Maximizing Potential: Lengthening and Strengthening Our Stride*, Hong Kong.

October 13–14, 1995
Teacher Institute on Differentiating the Curriculum, Holiday Inn, 1010 Northgate Drive, San Rafael. For registration information, contact 415/965-0653.

March 1–3, 1996
34th Annual CAG Conference, *GATE Connections: Computers, Curriculum and Community*, LAX Hilton and Towers, Los Angeles.

CALL FOR PRESENTERS

The Autonomous University of Tlaxcala invites you to submit a proposal for a presentation at the Second Multicultrual Meeting of Special Education, October 19-21, 1995, in Tlaxcala, Mexico. Education of the gifted will be one of the areas of the conference. Sessions will be 50 minutes in length, inlcuding a question and answer period. Presentations may be made in English or Spanish. All expenses will be the responsibility of each presenter.

If you would like an application form (which will be due by April 30), contact the editor of the *Communicator*.

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What Do Teachers at Home and at School Need to Know About Brain Research?

by BARBARA CLARK

"If he's really gifted, he won't get bored; he'll find something to keep himself busy."
"Why would you need to spend any extra time on gifted students? Everyone knows that they can get along for themselves."
"We don't believe in 'gifted programs'. Children who aren't identified might feel bad. Besides, everyone is gifted in one way or another."
"I don't see why I should worry about challenging gifted students. You are either born gifted or you aren't. No matter what I do, it won't change that."

In 1961, in a brain research laboratory on the University of California, Berkeley, campus these comments were challenged and found to be invalid by the answer to a very simple question. "Does the environment affect the growth and structure of the brain?" The answer, after months of careful experimentation and study, was definite, "Yes, in very important ways!" In the years that have followed, Rosensweig, Krech, Diamond and their colleagues in other brain research laboratories around the country have continued to collect data that show that what we as parents and educators do in our homes and classrooms either enhances or inhibits the growth of the brains of the children who live and work with us. With the advancement of technology in research laboratories we discovered that intelligence is not a characteristic that is in place at birth, inherited and immutable. Rather, intelligence is only a potential supported by an inherited genetic pattern and an amazingly complex brain structure that can grow within a rich environment filled with challenging opportunities, or be slowly diminished in range and power until only a limited amount is being used. Far from being static, in place at birth, and unchanging, intelligence is now known to be dynamic, continually in need of stimulation, and much less limited in the range of potential than was ever thought possible. High levels of intelligence are developed only when the potential with which a child is born is given opportunities to grow. Intelligence can only remain advanced and efficient if it continues to be nurtured throughout the child's lifetime. We now know that parents and educators play an essential part if such high intelligence or giftedness is to last and result in meaningful contributions to the individual and to society as a whole. Very bright children, those we call gifted, cannot "get by on their own."

For decades it was believed that intelligence was complete at birth and that it did not change throughout life. Indeed it was supposed that intelligence diminished after middle age because after the age of 45 the brain was assumed to slowly die. It is now known that the brain changes in a dynamic and interactive way all through life and responds to the enhancement or inhibition of stimulation, allowing intelligence unlimited ability to develop far into later life. High intelligence, regardless of how it is expressed, results from this interaction between inherited and acquired characteristics supported by a rich, stimulating environment. This interaction encompasses all of the physical, mental, and emotional characteristics of the person and all of the people, events, and objects entering the person's awareness. As researchers now state, our genes are not a limit, but instead provide a rough outline of the possibilities of our life. The endless interaction of the environment with this genetic framework creates our intelligence, even our perception of reality. This process begins very early, as soon as the fertilized egg attaches to the wall of the uterus. As the cells divide and the fetus begins to grow, the environment exerts influence, what biologists call "developmental noise." One could not from this interactive point of view say which is more important, the inherited abilities or the environmental opportunities to develop them. Restriction on either nature or nurture would inhibit high levels of actualized intellectual ability or giftedness.

Two features of brain function that are particularly important to any discussion of the origin and nurture of giftedness are the mutable nature of the brain resulting in a concept of intelligence that must be seen as dynamic rather than static, and the interactive nature of the development of the brain in which both genetic and environmental factors must be considered interdependent. These features result in a new view of the learning environment and the opportunities it provides as critical to the

development and maintenance of giftedness. From this view not only must the environment provide experiences that challenge and stimulate the level of development of each learner, but it must do this on a consistent and continuing basis. A most commonly held premise from neuroscience research related to talent and ability can be summed up in the phrase "use it or lose it." Education can no longer be comfortable with environments or policies that treat all learners as age normed, nor can heterogeneously grouped classes be given the same experiences presented from the same materials and expect that appropriate learned is being provided.

Change in the brain that results in higher levels of intelligence can be measured in several ways and can be seen to be the direct result of stimulation. For example, in the neurons, the basic cells of the brain, appropriate stimulation creates an increase in the amount of branching of the dendrites, the tiny appendages of the neurons that receive electrical impulses for the cell, heightening the child's ability for complex thought and for seeing interconnections. Myelination of the axon, the appendage of the neuron that carries the impulses away from the cell body, increases with stimulation, allowing the transmission between cells to be faster and more powerful. With increased stimulation, the number and size of the synaptic contacts or interactions between cells increase, allowing faster thinking and more complex communication within the system. In highly intelligent children more use is made of the activity of the prefrontal cortex of the brain, allowing more creative behavior, future planning, insightful thinking, and intuitive experiences. These changes continue to occur as long as appropriate stimulation is available.

Brain circuits are chains of neurons formed from the process of outside stimuli being converted into electrical signals and then being passed from one neuron to another. These signals will forge new pathways within the brain or follow pathways formed by prior experiences. While these networks proliferate during childhood, even in later life they are fine-tuned, strengthened, or weakened with experience. The more of this circuitry that has been produced by interaction with a stimulating environment, the more information that can be processed, understood, and recalled efficiently. Gifted students have been found to have a greater number of neural networks, be more efficient in their use, and therefore able to recall more complex and interrelated information. "Smarter" brains have been found to consume less energy than other brains because of this efficient use of brain circuitry. It is now more understandable why gifted students learn faster and retain information longer.

Those whose work is focused on children have concluded that children's brains can make far more synaptic connections than can the brains of adults. During infancy and early childhood the brain makes connections at an incredible pace. During adolescence this pace slows. The connections that are more useful are made permanent, and those that are not useful or are not continually used are eliminated. This does not mean that you cannot learn later in life. New data indicate that the brain has the remarkable capacity to change and grow, even in old age, and individuals even have some control over how healthy and alert their brains remain, depending upon how stimulating a life they lead. It does, however, bring into question the wisdom of the notion that young children should not be asked to do difficult thinking. The records of eminent persons consistently show that, in every case, there were opportunities for high levels of training, practice, problem solving, and thought at a very young age which continued over time, becoming increasingly more difficult and more challenging. The conclusion that these researchers make is that there is an ability to learn quickly and efficiently in childhood that is never again paralleled.

It is now possible to see a biological base for the characteristics of giftedness. While all children have the potential for these biological changes, only some children can be seen to have developed such advanced and accelerated function. Characteristics that result from these changes can be used to identify the gifted learner. Although expressed in each child's unique way, behaviors that often can be ob-

served among these children are: intense curiosity, frequent and sophisticated questions, rapid thought and learning, persistence in pursuing interests, early development of language and mathematical skills, idealism and concern for fairness and justice, high expectations for self and others, and preference for creative solutions and actions over predictable ones.

Regardless of how this power, acceleration, complexity, and effectiveness of intellectual function are expressed, whether creatively, artistically, or through academics or leadership ability, the need for appropriate stimulation for these gifted and talented students is critical if growth is to continue. While all students need appropriate stimulation to continue to grow intellectually, the structures and practices of many schools make gifted students the most vulnerable group for losing intellectual potential. First, classrooms are organized with the assumption that all children of one age learn at the same level. Recent educational movements have emphasized the practice of heterogeneous ability grouping without noting that they are at the same time homogeneously grouping by age, which is not a good predictor for what a child should learn. With the use of such practices, unless teachers focus on the needs of each student, appropriate challenges for gifted students are often overlooked, and both strategies and materials are provided that often have been mastered already or have neither the breadth nor pace to meet their needs. Additionally, the attitudes of educators too often reflect those related at the beginning of this article, that the gifted can "get by on their own" and that it is unnecessary to provide anything beyond the core curriculum for gifted learners. However, students who have developed their abilities to the extent that allows us to call them gifted and talented cannot maintain those abilities if their educational experiences are not challenging and appropriately accelerated. If they cannot progress, they will unfortunately regress.

Stimulation for the brain comes in many forms and is needed throughout life. As scientists explore further appropriate types of stimulation for each child at each age, we can take their preliminary findings to help us provide a more challenging environment. Investigation is now being conducted from the fetal stage through old age, and remarkable findings are becoming evident. We have far more ability to grow intellectually than we ever thought possible. Remarkably, the more we use our brain, the more efficient and intelligent we become. Some of the suggestions from the research for improving brain function and nurturing intelligence are:

1. Eat a balanced diet. The brain needs protein and vitamins, among other nutrients, to develop the membranes and chemicals that facilitate memory and learning. Nutrition has a significant effect on initial development, growth of the chemical neurotransmitters that make connections between neurons that develop brain circuits, brain function, and behavior.

2. Provide an enriched, responsive learning environment. In an environment that provides a rich array of materials and activities, parents and teachers must also provide opportunities for children to explore their own abilities and interests. The environment, whether at home or at school, will stimulate the brain to grow if it responds to each child's needs. Access to many levels of learning and a variety of materials, strategies, and activities provide stimulation for all children, but they are essential to the development of gifted children who learn faster, in more depth, and from the interconnection of ideas.

3. Stimulate all the senses: sight, taste, touch, smell, and hearing. By combining the senses in every learning experience, lessons are more easily learned and better remembered than is possible with reading, lecture, or paper and pencil tasks alone. Learning experts suggest that teachers create colorful, three-dimensional mental images, using sound, rhythm, touch, and even scent to support the learning. Writing, touching, talking, listening, moving, and even smelling enhance learning and stimulate memory.

4. Reduce tension and stress. Although some stress is essential for optimal performance, too much pressure over time can block learning and even kill brain cells. Interestingly, the perceived control we have over the stress may determine how much it will affect our learning. Studies have shown that living with stress results in slowed learning and memory failure.

5. Use real, complex experiences for learning. The brain looks for meaningful connections, not simple, step-by-step sequences. We can no longer use single goals or objectives in teaching, but must allow for developing patterns and relationships. The brain does not just process information; it constructs meaning. Integrated use of all of the brain's functions, including cognitive, emotional, physical, and intuitive, results in more powerful learning experiences. The use of interdisciplinary curriculum, authentic projects, flexible grouping, community building, and thematic instruction help meet this need.

With the information now available from brain research, it becomes evident that teachers at home and at school must focus on individual learners, on their abilities and needs. All children are unique and require individual guidance. Learning is a very personal and individual matter. Each child should have the opportunity to develop his or her potential and "use it" instead of "losing it." Gifted children are no more special than any other children, but they do have different educational needs.

Dr. Barbara Clark is Professor of Special Education, California State University at Los Angeles.

The complete list of references for this article may be obtained by contacting the *Communicator* editor.

An Ethical Dilemma for the Classroom: DNA Research and Gene Manipulation

by JERRY CHRIS

Nearly one fourth of the children in a small Ashkenazi Jewish community have died because of a gene which causes decomposition of the brain. This anatomical malfunction, Tay-Sachs disease, which pathologists had previously blamed on a variety of environmental influences, including alcohol or drugs during pregnancy, will kill the child within the first three years of life. (Becker)

Tay-Sachs is only one of hundreds of human conditions which scientists now believe have their basis in heredity rather than in the environment. Believable, if not conclusive evidence, has been found to support the genetic cause of such varied traits as alcoholism, obesity, and homosexuality. Even the ability, or inability, to carry on a lasting romance may have a genetic foundation. (Gray)

If we accept this premise, then we must also accept the possibility that good looks, athletic ability, and positive attitude might also result from genetic disposition. As, day by day, scientists discover new ways of altering DNA in plants and animals, one can only surmise that it is only a matter of time before having a child will differ little from shopping in a catalog. If cotton can now be grown in colors or tomatoes be grown with increased shelf-life, simply by manipulating DNA, human genetic engineering is just around the corner. Do I want my child to be male or female, tall or short, blue-eyed or brown-eyed? Am I willing to give up some good looks in favor of more athletic ability? Do I prefer a happier disposition at the cost of just a little intelligence? Do I want my child to be well organized or wildly creative? My first child had great writing talent...do I want this one to be a musician?

Whether man is curing Tay-Sachs disease, combating alcoholism, or creating the perfect child, he faces multitudinous questions which cannot be answered without ethical consideration. However, contrary to the current thinking of many school boards and government officials, ethics are not simply a set of rules imposed by the left or right wing, by Murphy Brown or Newt Gingrich, or a moral code mandated by any church body; rather, the question of ethics has been and will continue to be debated as long as mankind roams the Earth in search of the good life. Every great philosopher has participated in this debate and applied his own personal theories to the questions of the day—many of which seem far simpler than those which our current students will soon face when they begin making babies with the newfound power to alter the basic nature of their children in a manner heretofore reserved for the gods.

Perhaps then, a basic ethic in modern education *ought* to be that every student be given the opportunity to participate in ethical debate in hopes that every student will learn to consider every decision from a variety of viewpoints. As Plato suggests, "the Good" can only result from knowledge. Finding the formula for the good life and happiness is an intellectual task no different from any other disciplined study in the classroom. Just as we cannot expect students to remember a formula for chemistry or calculus after graduation unless they truly understand the concept, we cannot expect students to make rational, "moral" judgments throughout their lives unless they are able to apply the theories to real life situations and are able to envision the ramifications of their actions—something few teens do today. Just as a straight lecture in history class is soon lost, so too is a dogmatic mandate from the pulpit when the student is placed in a position of taking a stand on an issue of personal importance.

Can we then, as educators, play the role of Plato's Philosopher Kings and arrive at an absolute law which might govern all actions? Hardly! While many well-educated readers of this article might wish they could return to their youth in order to have the opportunity to choose the size and shape of their children, many others will be undoubtedly so repulsed by the suggestion that we tamper with genetics and that a teacher might expose his students to this nonsense, that they will turn the page to much safer ground. However, the possibility of genetic alteration is inevitable; the questions are whether or not man *ought* to continue in his quest and whether or not individual man *ought* to utilize this knowl-

edge should the possibility become reality. To this end, let us now consider several debates at the foundation of classical, ethical philosophy.

One of the most basic of these debates concerns *motives* vs. *consequences*. Immanuel Kant proposes motive as the foundation of ethical judgment, while the importance of consequence is defended by the Utilitarians, John Stuart Mill and Jeremy Bentham. Kant believes the basis of morality lies entirely in our intention. "Nothing can possibly be conceived in the world, or even out of it, which can be called good without qualification, except a Good Will." (Durant) In other words, an action may result in a tragedy, but the goodness of that action should be judged only on the original intention of the doer. Suppose, for example, a doctor attempts to alter the Tay-Sachs causing gene in order to save the above-mentioned one-fourth of the community. However, in the process, he accidently mutates a strain of DNA which results in the death of one-half the children. Kant would still consider the doctor's actions virtuous; his intentions were beyond reproach.

On the contrary, John Stuart Mill would find the action unethical, even though the doctor intended good. According to the Utilitarians, an action is right in so far as it tends to produce the greatest happiness for the greatest number. Their attempt was to find an objective principle: effect outweighs intention. The more astute students involved in this discussion will point out that the Utilitarians have separated the rightness or wrongness of the action from the goodness or badness of the agent. Kant finds this impossible.

A related debate involves the *Common Good*, as supported by Plato, vs. *Egoism*, as backed by Baruch Spinoza. According to Plato, the individual must sacrifice his own pleasures for the good of the state. In the *Republic*, for example, parents in the guardian class would have to give their children up to be raised by the state. In the case of modern genetic manipulation, should an individual be sacrificed, used as a guinea pig, with the possibility of saving a community? Of course. Plato went so far as to say that the individual was so unimportant that humans with mental or physical defects were a drain on society and should be tied to the rocks for the birds to eat.

In contrast, Spinoza finds that progress results only from the pursuit of wisdom by the individual, often at the immediate expense of what some might consider the common good. Unless individuals are willing to break away from the constraints of their fellow man and pursue their own dreams and imaginations, mankind cannot move forward. Eccentrics such as Einstein, Mozart, and the Wright brothers seem to validate this philosophy. Spinoza then, if he were alive today, just might give science his blessing for whatever research is possible.

Just how *extreme* might we allow these scientists to become in the pursuit of ultimate control over the human body? Aristotle, in his writings on the Golden Mean, cautions that the proper work ethic is always one of *moderation*. Through an often tedious process of trial and error, man gathers the empirical data needed to formulate the correct path for happiness. "Virtue, or rather excellence, will depend on clear judgment, self-control, symmetry of desire." (Durant) Would Aristotle, as a parent, seek to create an ideal child if it were possible? Would that child be a *mean* himself—not too smart, not too industrious, not too idealistic? Undoubtedly, many modern students would offer the same criticism which has been suggested for centuries; if everyone drifted toward the mean, life might become rather boring.

Several "extremists" differ sharply from Aristotle's point of view. If one adopts the Hedonistic philosophy that "pleasure is the sole good," certainly he could justify any genetic engineering which could result in mankind's happiness. Within a few years, scientists believe it may be possible to isolate cancer causing genes. One must note, however, that the father of Hedonism, Epicurus, warned against "dynamic pleasure,"—pleasure which is followed by pain. Just as the drinker must pay for his alcohol consumption the next morning with a hangover, so too, mankind might pay for the eradication of disease with overpopulation and its outgrowths such as increased crime, pollution, and poverty.

The Stoics would also differ with Aristotle since they believe man's destiny is fated. Good and evil depend entirely on the individual's ability to remain indifferent to all external forces. A man becomes virtuous when he learns to accept his fate as part of a divine plan which he is powerless to alter. Physical and mental aberrations are part of that plan. Ethics require that we let be, not attempt to change genetically what has been predetermined for us.

Obviously, then, men will continue to debate the best formula for the good life, for the answer to how man *ought* to live. Can we ever hope to arrive at an *absolute* answer? At least two classical philosophers, Plato and Kant, believe so. Plato offers the Philosopher Kings, who after years of education, communal living, and celibacy, are capable of making flawless decisions for the good of mankind. When asked if God was good, Plato responded that He was good if he agreed with the Philosopher Kings. However, these leaders are themselves products of their environments, and students should immediately recognize that this makes their mandates *relative*. Even if we accept that ethics "require the concession of individual sovereignty to the common order," (Durant) would this concession be on the terms of Nietzschean rulers who gain power through the bravery of the strong, or on the terms of followers of Christian ethics who grant kindness to the weak?

Kant also attempted to define an absolute ethic through his "categorical imperative." He commands that we follow unconditionally the dictates of conscience, that we "act as if the maxim of our action were to become by our will a universal law of nature." (Durant) Kant thus suggests that important ethical questions require only a purity of spirit; man innately knows what is moral. The student philosopher might now question the complexity of ethical prob-

lems in 1750 as compared to those in the genetics lab of 1995. If the student sees the conscience itself as a product of the environment, he can only conclude along with Spinoza, that all ethics are relative: "For one and the same thing can at one time be good, bad, and indifferent. For example, music is good to the melancholy, bad to mourners, and indifferent to the dead." (Durant)

If by some miracle, students did actually agree on an ethical philosophy, their task would still only be just beginning. The above discussion is only the tip of the proverbial iceberg. Several rather important question are left to be answered. Let us suppose the class agrees to allow genetic alteration for the purpose of improving the common good; this would done by "fixing" anything which is not "normal." Now all the students have to do is to agree on what is normal and what is genetic aberration. Two areas currently receiving much scientific attention are homosexuality and obesity. Since statistics indicate that every classroom has at least one homosexual, could the public school teacher allow the class to vote to "fix" this student? If indeed homosexuality is proved, beyond a doubt, to be a matter of genetics and not choice, does it then automatically become more "normal" in the majority's eyes? And what of obesity. Does Roseanne Barr or Kate Moss seem the healthier? Is obesity unnatural or has society simply made it seem that way?

And finally we must consider the future. Current studies indicate the likelihood of engineering genes within a man's sperm, thereby altering the genetic makeup for all that man's descendants. Is it possible that a couple might choose to eliminate some trait which is very unpopular in 1995 only to leave their great-grandchildren without the possibility of that characteristic which seventy-five years later might make them a member of the "in" crowd?

Questions...questions without simple answers. But isn't that what gifted education is all about? Isn't that what makes philosophy one of the most intriguing disciplines for the modern student? Every day the newspapers carry another story involving DNA discoveries. Every day our students grow one step closer to facing these decisions for themselves. Let us hope that through our classrooms, students have learned to study alternative formulas and consider possible results—the cornerstones of ethics.

Jerry Chris teaches English and is International Baccalaureate Coordinator at Mission Viejo High School, Mission Viejo, CA.

You may obtain a list of references for this article by contacting the *Communicator* office.

Teachers

You bring a smile to my face
Because I know I have learned.
You teach me about the world,
And what I get must be earned.
Towards life we now
Have a better attitude,
So we send our thanks
And our deep gratitude.
The gift of knowledge
I now own,
The path of life
Me you have shown.
Your teachings you've taught,
Through life will carry me.
You make me open my eyes
And look around and see.
The world is from the past,
Yet the future is me.
Thank you. You've enriched the future
and made a difference in our lives.

—Emily Ravenscroft, 8th Grade
Hoover Middle School, San Jose

Book Review

An interesting new book for parents of gifted adolescents is 60 Ways To Assure Success For Your Gifted Children by Jerry Chris. Chris teaches at Mission Viejo High School and has survived the teenage years of his two daughters, so he is well-versed in the joys, problems, and needs of gifted young people. He offers good, down-to-earth advice to all parents.

He begins by reminding us that "at-risk" is a term that can apply not only to "dead-beat youth, sloppily dressed, wasting away on alcohol or drugs" but to "an entirely different group—nicely dressed, often drug-free group of gifted students who are very much at-risk of never reaching their potential. Experts estimate that as many as one-third of all gifted students fall into this category." He goes on to discuss some of the causes for this—students who never developed study skills because learning came so easily to them in the early years, students who cannot face the possibility of not being 100% successful all of the time, students who are too creative for even the average honors classroom and never find a groove in which they can be successful.

The purpose of the book is "to make one point perfectly clear: 99.9% of all gited at-riskness is preventable by the parents." The book presents twenty lessons, each accompanied by three practical activities to help parents assist their gifted youngsters in realizing their potential. It's readable, practical, and a good basis for encouraging rewarding parent-child communication.

Is What You Are Sold, What You Get?

The Experience of Parents of Intellectually Gifted in Pacific Rim Countries

by GLENISON ALSOP, PhD

For parents of the intellectually gifted comparisons of educational programs with those in other countries can be the occasion for due reflection, both positive and negative. On the one hand, through study of another country parents can be reassured that indeed their children are in a supportive educational setting—comparatively. On the other hand however, by studying another country's educational practices parents might become convinced that greater efforts will need to be made to secure something better for their children.

Californian parents, for example, might learn a great deal about the current trend toward "inclusive classrooms" by talking to parents living in Australian states. Throughout at least the last 20 years students have been educated in mainstream classrooms: in otherwords, heterogeneous grouping, including children with moderate and severe disabilities. In tandem with those classrooms has been an active anti-testing movement. So successful has been the anti-test movement—and in fact, anti-assessment movement—driven by teacher unions, that no regular standardised achievement testing is carried out in Australian classrooms as a means of evaluating and monitoring student performance. The first time students encounter external assessment is in their final year (Year 12).

Anti-test ideology is fuelled by mainstream situations. The differences in student performance are so extreme in such classrooms that it becomes necessary to develop "soft" tests, or to stop testing altogether. The persuasive-sounding reference to "alternative methods of evaluation" means, in reality, no meaningful assessment.

Overall then, comparative studies do provide benchmark comparisons. They can offer a commonality of experiences from which to make judgements about shared conditions. Education of children is most certainly a shared, and very relevant condition for parents.

Unlike the other exceptionalities (those more widely associated with the term "handicap"), there continues to be in the United States a destructive ambivalence about the responses of educators to the intellectually gifted and to their families. Nowhere is this more evident than in Stephanie Tolan's observation, made in her response to the newly released Federal Report *National Excellence:*

> *"Fifteen times in thirty pages we are reminded that all children need a better education. Imagine the report of a federal committee investigating the nature and extent of poverty in America repeating on every other page that all citizens could use more money."* (Tolan, 1994, p. 230).

Tolan's rebuke of the authors of this report would seem to be entirely justified on grounds of logic. For example, no one who reviews the implementation of the Disabilities Education Act feels compelled to defend themselves by claiming a "disabilities education" for *every* child.

In terms of comparative studies, it could be argued on several grounds that the Pacific Rim (PacRim) should be an area of intrinsic interest to Californians. Not only is there a shared seaboard, but because many Californians are of Asian descent, there is also a significant shared heritage. The PacRim also includes the most dynamic growth areas in the world. According to economists, the PacRim is a vast and diverse area of enormous potential for the business driven. Although Japan is not quite the economic miracle it formerly was seen to be, it is nonetheless of enormous significance within the global village. China remains of abiding fascination. Since the 19th century, when Lancashire cloth manufacturers speculated upon the profits to be made when each Chinese should purchase one yard of good Lancashire cloth, the possibilities inherent in such a large population have preoccupied Western imaginations. Exporters today are no exception, despite oft-heard moralistic expressions of concern for human rights.

Education is held to support economic growth and political maturity. Well might one wonder at the sort of educational underpinning for the growth rates of the so-called "Tigers" such as Taiwan and Malaysia, or Singapore, or Hong Kong.

It is then, of some interest to ask what the education systems of these countries might of-

fer their exceptional children, specifically their most able students. Is there a commonality of educational experiences between Californian and PacRim parents of a child we refer to in Victoria (Australia) as a CHIP—a child of high intellectual potential?

And just as there exists a vast variation in the human condition in general across the PacRim, so too, is there in education. Indeed the area was found to encapsulate the same ambivalence and difficulties associated with intellectual enhancement as those in the U.S. Overall, the review of the PacRim did little to invalidate an active scepticism toward how deeply countries were committed to the special needs of CHIP.

PacRim: Which Countries?

For the purposes of this survey exercise, PacRim was reduced to manageable proportions. This was achieved through the simple device of eliminating countries about which nothing could be found in relation to the education of the intellectually gifted. At the same time were included those countries about which something could be found, or where a colleague was able to provide information.

Application of this somewhat simplistic sampling process produced a focus on seven countries: China, Taiwan, Japan, Hong Kong, Singapore, New Zealand and Australia. (A response to a survey sent to Malaysia was received after the preparation of this paper. The response indicated that no provision was made for CHIP or gifted and talented in that country.)

This PacRim appears somewhat ad hoc in its composition. However the reason for "ad hocery" is associated with ensuring the reliability of the information obtained.

Questioning the accuracy of information about provision for CHIP is inherent in the title of this paper. What that title actually highlights is the existence of a gap between what information is given to parents, and what is reality. That such a discrepancy does exist between what is claimed, and what is experienced in the real world is a recurring theme throughout this paper. Its purpose is to remind parents of CHIP to be prepared to question further, and to be vigilant in evaluating what they are told is being offered to their children. Constant questioning may not be an especially comfortable exercise. It is nonetheless very necessary. Experience suggests that to be effective as advocates for CHIP, their parents do need to establish litmus tests for evaluating what is being sold to them as "programmes."

Such a need for caution became especially apparent to parents and teachers in Australia who read the May 1992 edition of *Roeper Review*. This edition offered an international overview of the area of gifted education. What appeared about Australia was unrecognisable. More significantly, that particular contribution had been made by a member of the Executive of the World Council for Gifted and Talented.

Criteria Used

To evaluate the information from the PacRim countries, three basic notions were applied. These three ideas represent what the professional staff of the CHIP Foundation believe to be the essential criteria parents of CHIP should use to evaluate the long-term prospects for securing an appropriate education for their children.

1. government policy
2. teacher education
3. clearly identified budget line

A fourth, less specific criterion, was also established: provision for other exceptionalities. The argument being sustained is that of social justice. CHIP and their parents have every right to additional resources for precisely the same levels of exceptionality, albeit at opposite ends of the normative distribution.

In regard to China, Taiwan, and Japan, research by Stevenson, Lee, and Chen (1994) had completed a thorough and careful review of provisions in these three countries. Published in the *Journal for the Education of the Gifted*, Stevenson, Lee, and Chen addressed indirectly the first three essential criteria—policy, teacher education, budget—but not the fourth, concern with other exceptionalities. What they reported was basically a very uneven distribution

of resources for the intellectually gifted.

Japan

Of the three countries, only Japan was entirely consistent. In Japan there is no provision for CHIP, nor is there any attempt to lay claim to any programme. Historically the education system since World War II has reflected a strong link between the concept of democracy as equality of provision, and the concept of competition. As practiced by the Japanese, egalitarianism in their education system has very rigid rules. It is argued that to provide for one group would unleash demands from other groups. Besides which, the ethic of hard work is perceived as being more important than innate abilities.

China

In contrast, China has worked hard to demonstrate to Western visitors and academics a commitment to intellect. Few professional educators visiting that country have not heard of the Youth Classes in which precocious achievement in Mathematics is identified and fostered through early entry to university via stringent ability and aptitude tests. Or rather, there were Youth Classes (in the plural). Cuts to budget have reduced "them" to "it," now offered at one institution only—the University of Science and Technology. In terms of the output of these classes for the period 1979-1990, 516 children were selected, the average age was 14.7 years, and 85% of these were male. The mean IQ of those selected was 123. It is commented that the classes have tended to attract children well-schooled (possibly by their parents) in task commitment (Stevenson, Lee, and Chen 1994).

In China therefore, aside from what would appear to be used as showpieces, there was found to be no government policy, no specialised teacher education, and no defined budget line. Any implementation of provisions/programmes was dependent upon city or state government initiative.

Such specialities as are relevant to current political priorities, such as foreign languages and sport, do attract support however. The twin motives of utilitarianism and geopolitics would seem to be uppermost. In regard to sporting giftedness there exists a particular fanaticism associated with developing prowess if one considers the cost of the Beijing bid for the Olympics, and the proven drug abuse by Chinese female swimmers.

Taiwan

Like China, Taiwan acknowledges the primacy of mathematics. It also promotes the sciences. Students who demonstrate remarkable aptitude in these subjects can be taught by university lecturers and can access university courses without entrance examination. However, these privileges are available only in the "pure" mathematics and sciences, not the applied.

Overall, 23,000 Taiwanese children are said to be involved in gifted programmes. Such programmes are described as taking place in "self-contained" and "resource classrooms." They are distributed across 126 elementary schools, 102 junior high schools, and 35 senior high schools. Selection procedures are clearly regulated: 2 standard deviations above the mean on an IQ test, or results within the top 2% GPA.

Thus it would appear that Taiwan does meet the criteria of having both a policy and a budget line. Teacher education is not addressed by the authors. What constitutes a "self-contained" and "resource classroom" is not defined and remains open to interpretation.

There are also two laws which do raise questions about the extent and philosophy which shapes the Taiwanese approach. It is the law that children must remain within their chronological age groups, and it is the law that accelerated placement of only one year is allowed to occur.

It also can be noted that the priority in the Taiwanese system is heavily skewed toward those skills which would be held to underpin utilitarian ends. In other words, it is difficult to escape the conclusion that Taiwanese "giftedness" is equated with a view of children as an economic resource.

Hong Kong, Singapore, Malaysia, and New Zealand

For these countries, a survey of nine questions was sent to known colleagues.

The first survey returned (and with quite remarkable speed) was from Hong Kong. Perhaps the swiftness with which the survey form was returned can be explained by there being nothing (according to the respondent) to consider or to comment upon in the area of the intellectually gifted in Hong Kong—no policy, no teacher education, no schools. A similar response was gained from Malaysia some months later.

From these responses a question arises. Hong Kong will host the next World Conference on

the education of gifted and talented children in 1995. Should failure to have a policy, or schools or teacher education disqualify a country from hosting such an event? Perhaps not. But it might be remarked—and with a fair degree of legitimacy—that in this failure, and in the very tolerance of such failures, lies the continuing weakness of the gifted movement.

The situations described in surveys from Singapore and New Zealand exemplify a somewhat different perspective. Colleagues in the latter country indicated a flourishing gifted education program, particularly in the private school sector in which a healthy proportion of New Zealand children are enrolled. This, in the opinion of the respondee, was in response to the strength of parent demand.

However, New Zealand offers no policy and no budget line associated with the public schools. Nor are there programmes in teacher education at either preservice or postgraduate levels. Yet it was estimated by the respondee that between 76% and 90% of schools were offering "programmes" in CHIP due to parent demand. The conclusion to be drawn is that CHIP in New Zealand are being taught by teachers who know nothing about their needs, if in fact they have been identified appropriately at all!

What of the situation in regard to the other exceptionalities? In New Zealand there are specialist schools for intellectual and physical handicap, and for music. Specialist teachers are trained for both these areas, plus those of sport, dance and the visual arts. In teacher qualifications there is a Diploma of Special Needs.

Singapore's policy toward CHIP is contained within the wording "Every child will be developed to the fulfillment of his/her potential." The Singaporean response to the needs of CHIP is driven by the centralised bureaucracy. It involves four primary schools and three secondary schools, which represents between 1% and10% of the total number of schools. The special classes in the primary school commenced at grade 4, selection being undertaken in grade 3. Teachers were in receipt of no specialised training.

Thus in Singapore, a family *might* find their child to be fortunate to be in the correct grade in the correct school (one of 4) from where he or she could be selected into a "special class." After that he or she will be taught by a teacher who has no specialist training.

To Be a Parent Of CHIP in Australia

As in the United States, the situation varies from state to state. Ad hoc provision, poorly supported by government policy across the states, obscure budget line, no apparent attempt to establish the area through teacher education: such are the broad characteristics of the situation in relation to CHIP in our country.

New South Wales (NSW) is considered to be by far the most congenial setting, especially in Sydney. In certain areas selective classes for grades 5 and 6 were preserved, despite a union-led teacher attempt to dismantle them in the early 1970s and 1980s. The same may be said of a limited number of selective high schools—which are not situated throughout the state.

It might also be noted that emphasis on identification and programming at grade 5 and

high school levels would appear to tap the notion of achievement rather than potential. It is quite clear that a child can be a gross underachiever by grade1! (Silverman 1993)

NSW recently has announced a policy for the intellectually gifted and is also moving toward progression through school based on ability to master skills associated with each level. This will mean that children are likely to find themselves grouped more by ability than by chronological age, a practice which research clearly and repeatedly tells us optimises academic achievement and affective adjustment among CHIP.

In the area of teacher education the NSW government has mandated that every school should have a teacher responsible for the needs of gifted and talented. That teacher is to have appropriate training.

The NSW policy remains a little vague about the identification process. It seems that much will rely on the use of standardised tests to be held twice in the career of a primary school child and once during secondary school. Should this be the case it would seem that, as in the instance of grade 5 special classes and selective high schools, the heavy reliance on achievement rather than potential has been preserved.

Currently the state of Victoria (the author's state) has no policy on this population of children. On the criteria of other exceptionalities however, the state of Victoria has a flourishing specialist education industry, with budget in the hundreds of millions of dollars of public money, facilities located and supported within several government departments, and specialist training and accreditation for teachers who can rise through defined specialist career paths.

In regard to CHIP, the state of Victoria has no initial teacher training programme which includes specialist classes about this exceptionality. All programmes contain considerable and compulsory components which address the specialities of disabilities, low socio-economic groups and minorities. In 1989 the University of Melbourne's CHIP Unit became the first teacher education facility in the entire country to offer full post-graduate programmes in the intellectually gifted. Hence any response at the professional level to the intellectually enhanced is of very recent origin. It should be noted that teacher educators on key committees have prevented the CHIP programme being taught at the preservice level, on the grounds of "elitism."

Research conducted in the early 1990s among parents of CHIP in the state of Victoria indicated their vulnerability to the advice of teachers. Once their children had been identified (IQ 130+ on a Stanford Binet Form LM), they had very firm views that they would be offered the same level of professional support and expertise as the other exceptionalities. Instead their children had been offered a steady diet of "enrichment" composed largely of photocopied Maths sheets and project work—all to be completed without the involvement of the teacher, and preferably without further disruption to the class. Quickly the children saw through the ruse, and returned to their unhappy and noncompliant behaviours. Their parents took a little more time to comprehend the nuances of the situation, as they had to get over a belief system in which professionals (teachers) were regarded as expert.

At the same time the educators in Victoria were being sold a hefty bundle of publications dealing with "higher order thinking, future problem solving, Odyssey of the Mind (Tournament of the Mind), and autonomous learners." However meritorious these efforts might be, they do not constitute an adequate response to the needs of CHIP. An overall 61% of the families in the study moved their children out of the school in which they were enrolled at the time of testing (Alsop, 1994). A further 28% moved a second time.

For American parents the Victoria example represents two strands. The first is associated with a system in which classrooms are mainstreamed, and in which there is no standardised assessment. The teacher unions are powerful, and there is a commitment to equality—of outcomes, not of opportunity. The second strand is that of resistance to any provision for CHIP on a curriculum basis. The result has been a teaching profession untrained in this exceptionality and the proliferation of ad hoc "instant" provisions, such as can be tacked on to the regular classroom offering. It may come as a surprise that the language of excellence is used to describe what is essentially a system which cannot be evaluated!

What Does This Sample of PacRim Countries Tell Us?

Collectively the information assembled about the PacRim underlines the fragility of the creature we would call the education of children whose capacity to learn is enhanced.

In many ways the PacRim encapsulates the ambivalence and the difficulties associated with the exceptionality of intellectual enhancement. It serves to highlight that indeed we as parents

do run the risk of being sold something differing entirely from what we think we are getting. But the problem is even more insidious than that. There is the ever-present virulence of opposition to this group of children. If what is being evaluated is not acceptable to the most powerful, then it will not survive despite the defensibility of the programme. Even a sound evaluation programme will not save it.

More significantly, the language by which innovation will be heralded can be made to sound entirely credible, relying on the concepts of fairness and individual progress. The test designers may even produce "tests" to measure a variety of achievements—but of what may well be the question.

Apart from national reports and the debates of academics it seems most incumbent for parents of CHIP and advocates for their children to establish some of their own litmus tests for evaluating what is being sold to them as "programmes" for CHIP. One should keep in mind the Tannenbaum (1983) criteria which was concerned to distinguish ad hoc provisions from programmes embedded and intrinsic to the entire curriculum.

In July, 1993, an article by Richard Rovnik, Director of Gifted Programs for the Chicago Public Schools was published in the journal *Understanding Our Gifted*. A powerful analysis of the "pop" solutions offered by advocates of Bloom and his taxonomy, the Odyssey of the Minders, the proponents of Philosophy for Kids, the higher order thinkers and problem solvers, Rovnik returned to the 1965 work of Milton Gold to establish a genuine test of programme suitability. It was Gold who even then emphasised that a programme which is truly suited to CHIP cannot be accomplished by children of a lesser ability (Rovnik, 1993).

The implication is that identification should be undertaken using credible measures. Curriculum cannot be "modified" but should be offered in place of the regular programme, delivered full-time to groups of intellectual peers and at a suitable (faster) pace.

Rovnik addresses the *content* of what we are currently assured are viable and defensible programmes. Parents should look well at Gold's criteria as restated by Rovnik. These are very significant yardsticks against which to judge what is being offered under the term "gifted education." Lessons from the PacRim countries are strong reminders of how readily parents of CHIP are "sold" either indefinable and/or inappropriate responses to the special needs of their children.

The move toward mainstream education in the USA will defeat a genuine differentiated education for CHIP. Policy decisions relating to education in general and to the intellectually gifted in particular are not being made on the basis of research evidence. The Australian state exemplars demonstrate clearly the power of social ideology on education policy, especially when it is being interpreted by the executives of teacher unions.

The PacRim survey suggests that as in the case of Taiwan, the imperative of utilitarianism may be the most significant driving force and rationalisation for any programme. This is the human resources argument versus the right and dignity to personal development. It has become very common to refer to people as "resources." Our development, our education, our growth, is translated into so many units of usefulness: ergo, resources. As a rationale for responding to the needs of special children utilitarianism might be said to have triumphed over the dignity of personal development.

References

Alsop, G. (1994). The counselling needs of parents of CHIP. Unpublished doctoral thesis. The University of Melbourne, Australia.

Roeper Review 16,4. Special Edition. An International Outlook on Gifted Education

Rovnik, R. (1993). Re-examining the foundations of giftedness. Understanding Our Gifted, 5(6), 1,8-10,14.

Silverman, L.K. (Ed.) (1993). Counseling the gifted and talented. Denver, Colorado: Love Publishing Co.

Stevenson, H.W., Lee, S., & Chen C. (1994). Education of gifted and talented students in mainland China, Taiwan and Japan. Journal for the Education of the Gifted, 17(2), 104-130

Tolan, S.S. (1994). A parent and writer's response to the Federal Report. Roeper Review, 16(4), 228-229.

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TECHNET

Four Explorers' Perspectives

by TERRIE S. GRAY

1995 is a great time to be alive, but if you've got an explorer's nature, you can forget about the North Pole, South Pole, Mount Everest, the Congo, the Wild West and the Amazon: humanity has "been there, and done that!" However, in this article, I want to share with you the insights of some "virtual" explorers and encourage you to join their ranks as Explorers of the Internet. Each of these contributors uses telecommunications in the classroom. The remarks included here are excerpts from messages they exchanged with members of WWWedu, a listserve devoted to the use of the World Wide Web in education. (A listserve is the electronic equivalent of a club or discussion group. Individuals subscribe by sending in a request to the list owner who then includes them in the discussion by forwarding all e-mail messages sent to the list. WWWedu currently has about 800 members around the world.)

So, go ahead, read over my shoulder, and learn what treasures Internet Explorers have discovered...

David Propp, Greenwhich Connecticut

David has sent me a unit he created for a Math, Science and Technology Curriculum called "The History of Scientific Thinking Program" which encourages students to "observe, experiment and discover in a historical context." In addition to the math and architecture activities are these technology-based activities he described in a recent message:

"The next phase of my MST curriculum involves the historical path toward understanding of the cosmos. As part of this phase of the project, students will create models of astronomical devices, such as Stonehenge, Mayan and Incan observatories, etc. They will also make models of telescopes, explore rocketry, constellations and the solar system and beyond. They will present a play based on the planets for younger students in the school with original music lyrics and dance. This will be a multimedia event, with sound, projections of the constellations and other effects. For this project period, students will conduct research using NASA's Internet resources, including pictures. They will also use the CD-ROM Redshift and use Hyperstudio for presentation purposes, as well as re-enact various experiments such as Erastosthenes' measurement of the circumference of the earth and other astronomical highlights from early and later history."

Roger Guyer
(rgeyer@pen.k12.va.us)

Roger talks about today's role for the classroom teacher:

"a mutual, collaborative self-exploration of knowledge between teacher and student. A... mindset that we all have to gear up and get used to is the idea of JIT Teaching—just-in-time teaching of new technology is changing entirely too fast. Kids love to explore, explore, explore and we hold kids back if we don't encourage this."

Caroline Watts McCullen
mccullen@aquarius.cc.ucf.edu

Caroline McCullen teaches "a class called Telecommunications to middle school students. at Discovery Middle School, Orlando, Florida.

"We have 5 computers on-line with 14.4 modems through a SLIP connection provided by a local university. We also have 7 other computers and a laptop available in the classroom. Students work in cooperative groups. The on-line groups do telecom activities, while the other groups plan their research or process the information they got from their days on-line.

The purpose of the course is to provide experience with e-mail, gopher, the World Wide Web, and a variety of shareware programs. The goal is to use these tools to do research on topics the students get from their subject area teachers. I usually plan an 'electronic field trip' to a museum, server, gopher site, etc. with a handout of about 10 items to find. The kids find them, checkoff or record data, and turn the paper in for credit.

How are we doing? Some days I am absolutely amazed. Like the day a student researching China found a GIF (a color image) of the Great Wall at the Chinese gopher server. I'll never forget the look in his eyes as that vivid image flooded his screen.

His excitement was doubled by the fact that I had no idea it was there. He made the discovery for himself. That is quite often the case, and frankly I think this independence adds to the students' enjoyment and increases their learning.

But then there are other days...the SLIP doesn't work, the servers are down, we have too much line noise, etc. On the day when I planned a scavenger hunt for ASCII graphics at the Texas Tech gopher, the entire Texas server had crashed. I had 5 groups of kids expecting to download pictures of Ghostbusters with no working machines. But the kids were amazingly tolerant...and I learned, or should I say RE-learned the cardinal rule of Telecom: Always have a backup lesson! Someone once said, 'Teaching the Internet is like trying to change a tire on a moving vehicle.' I want to thank the author of that timely analogy.

Now where did I put that lug wrench...

I could go on, but I think you get the picture. I love it, the kids seem to be enjoy it, I know they are learning valuable skills, but my class is extremely unpredictable."

Caroline's classes publish *MidLink Magazine, the Electronic Magazine for Kids in the Middle Grades*. To find them, point your Web browser (Netscape, Mosaic, etc.) at: http://longwood.cs.ucf.edu/~MidLink

Joni Rathburn, Media Specialist, Oregon
(rathbun@ednet1.osl.or.gov)

Joni works "as a media specialist, tech coordinator and instructional facilitator (whew) in a primary school ...And I have to tell you, it's exciting. It's also moving somehow to see such change and growth. Not in just the teachers but the children. I left one classroom in tears last week—they had come so far in such a short period of time. Someday I will share the saga of Classroom #4. Meanwhile, I will share the practices we have adopted.

- Students become actively engaged in learning; teachers become collaborative partners in the learning process.
- Inquiry and invention take priority over memorization.
- Facts are transformed instead of simply accumulated.
- Quality and depth take priority over quantity.
- Simple multiple-choice and norm-referenced testing makes way for the demands of performance and demonstration.
- Communication, collaboration, and information access become paramount.

In order to express what it is we are doing, it should be mentioned that we borrowed heavily from a list of practices created by David Dwyer, Apple Classroom of Tomorrow: What We've Learned, "Educational Leadership," April 1994).

Meanwhile, these instructional practices are as relevant in a paper-pencil-chalkboard environment as in a high-tech environment. But if we are to reach learners of all backgrounds and abilities, we must provide a wide variety of tools with which our students can access, process, and respond to information. With predefined goals in hand, technology use can move beyond reinforcement of the status quo (consumption of knowledge) toprovide more ways for more and varied learners to participate and succeed in the learning process (construction of knowledge)."

Joni's slogan: "access, process, construct, and communicate knowledge and information."

I hope these dedicated teachers have encouraged you to bring telecommunications into your classroom. In the next TechNet, I will share a global network that looks promising. If you know of a telecommuting teacher or an on-line school we should feature, please contact me. Also, if you would like to learn more about a specific feature of technology I've neglected, send me a message.

Happy Exploring!

Terrie Gray is a telementor with the California Telemation Project and she teaches middle school in Chico, CA. Contact her at TerrieG@aol.com.

Prisoners of Time

A Look at the Report of the National Education Commission on Time and Learning

by JEAN DRUM

Late last spring the report of the National Education Commission on Time and Learning released its report and declared that American education is the prisoner of time. With that intriguing statement, the Commission embarked on an analysis of how time is spent in our educational system and offered recommendations for how we could spend that time differently, recommendations which, if adopted into our schools, could completely reshape how we go about teaching our children. The possibilities are exciting and the implications for education are enormous.

The Commissioners begin by saying, "Our time-bound mentality has fooled us all into believing that schools can educate all of the people all of the time in a school year of 180 days. If experience, research, and common sense teach nothing else, they confirm the truism that people learn at different rates and in different ways with different subjects." But, "the boundaries of student growth are defined by schedules for bells, busses, and vacations instead of standards for students and learning."

They discuss the school reform movement, noting that it has received wide support all over the country and that impressive effort is being made to realize the GOALS 2000: Educate America Act by raising standards of achievement and accountability. "But today's practices—different standards for different students and promotion by age and grade according to the calendar—are a hoax, cruel deceptions of both students and society. Time, the missing element in the school reform debate, is also the overlooked solution to the standards problem. Holding all students to the same high standards means that some students will need more time, just as some may require less."

By relying on fixed time schedules in our schools, "we have built a learning enterprise on a foundation of sand, on five premises educators know to be false."

The Five Premises

The first is the assumption that students arrive at school ready to learn in the same way, on the same schedule, all in rhythm with each other.

The second is the notion that academic time can be used for nonacademic purposes with no effect on learning.

Next is the pretense that because yesterday's calendar was good enough for us, it should be good enough for our children—despite major changes in the larger society.

Fourth is the myth that schools can be transformed without giving teachers the time they need to retool themselves and reorganize their work.

Finally, we find a new fiction: it is reasonable to expect "world-class academic performance" from our students within the time-bound system that is already failing them.

The American school, they say, needs to be reinvented, and along with this there needs to be a transformation in attitudes about education. "The transformation we seek requires a widespread conviction that *learning matters*. Learning matters, not simply because it leads to better jobs or produces national wealth, but because it enriches the human spirit and advances social health." Education "must become a new national obsession, as powerful as sports and entertainment, if we are to avoid a spiral of economic and social decline." This is definitely strong language.

They discuss the fact that society and family structure has changed radically in the last generation—more one parent homes, more working parents, more limited English speaking students, more children living in poverty, in dysfunctional families, in dangerous neighborhoods, more children caring for themselves. But, they say, "the school itself is a prisoner of time. Despite the dedication of their staffs, schools are organized as though none of this has happened. It is clear that schools cannot be all things to all people—teachers, cannot be parents, police officers, physicians, and addiction or employment counselors. But neither can they ignore massive problems. It is time to face the obvious. In many communities, when children are not with their

families, the next best place for them is the school."

They return to the problem of all students studying the same material for the same length of time—"caught in a time trap." The high ability students may be forced to spend more time than they need in a curriculum developed for middle-ability students, while other students may need more time, but have to move on before they are ready. Even the middle students lose, they say, when the teacher becomes so busy motivating the capable students and helping the struggling students that there is not enough time for the rest of the class.

They acknowledge that pull-out programs have been developed as an answer to juggling time to meet the needs of all students, but though they describe such programs as "attractive in theory," they describe them as adding "little additional time for learning. Students deserve an education that matches their needs every hour of the school day, not just an hour or two a week. Pull-out programs are a poor part-time solution to a serious full-time problem."

They discuss the amount of time that is given in American schools to non-core academic learning—drug resistance, family life, driver's training, as well as gym, study hall, homeroom, assemblies. This is compared with schools in Europe, where the time allotted for core learning is sacrosanct (approximately five hours a day) and other activities take place outside that time frame.

And, they say, "teachers, principals, and administrators need *time* for reform. They need *time* to come up to speed as academic standards are overhauled, *time* to come to grips with new assessment systems, and *time* to make productive and effective use of greater professional autonomy, one hallmark of reform in the 1990s. Adding school reform to the list of things schools must accomplish, without recognizing that time in the current calendar is a limited resource, trivializes the effort. It sends a powerful message to teachers: don't take this reform business too seriously. Squeeze it in on your own time."

The message the Comissioners are sending to American education is clear. We need more time, lots of it, to do all the things we must do if we are to really achieve world class standards, and we must arrange that time very differently from the way it is presently arranged. The Commissioners went to Germany and Japan to review what is happening in education in those countries, and they found that students there spend much more time in core academic classes and much more time outside school on homework. It is obviously not reasonable to expect American students to be able to compete with students educated abroad when those students are putting in roughly twice the time on their education as American students.

The Commission then made eight major recommendations for putting "time at the top of the nation's reform agenda."

1. We recommend a commitment to bring every child in the United States to world-class standards in core academic areas. This would mean high standards of achievement in English, mathematics, science, civics, history, geography, the arts, and foreign languages.

2. We recommend that state and local boards work with schools to redesign education so that time becomes a factor supporting learning, not a boundary marking its limits. "At a minimum, fixing the design flaw means recognizing that very young children enter school at very different levels of readiness." The recommendation includes relying less on the 51-minute period and using more block scheduling for exploration of complex topics, team teaching, greater flexibility in the daily schedule. "Grouping children by age should become a thing of the past." Instead, children should be placed at their level of accomplishment, and students who meet requirements while still very young should be given the opportunity for advanced courses. This recommendation stresses a multiplicity of teaching and learning techniques and a very flexible approach.

3. We recommend that schools provide additional academic time by reclaiming the school day for academic instruction. This recommendation includes the need to provide at least 5.5

hours of core academic instructional time daily, which, even if the school year stays the same, will almost double the present amount of core instructional time. Other student activities and programs (which the Commission feels are important and worthwhile) should be offered during a longer school day. Also included in the longer school day would be special efforts for the gifted and talented, English language instruction, and accelerated programs for those who wish to graduate early.

4. Keep schools open longer to meet the needs of children and communities. This is the correlative to the previous recommendation. In order to provide the 5.5 hours of core instruction, more time will be needed by some students. In addition, the need for after-school care is increasing everywhere, and making schools "community learning centers, vibrant and responsive to the educational needs of citizens of every age" is a part of this plan.

The Commission visited Murfreesboro, Tennessee, where every elementary school in the city is open from 6 A.M. to 7 P.M., a program which began in 1986 with one school. Educational services are offered from 8 A.M. to 5:30 P.M. and extended services before and after those hours. Parents pay a small fee, while students directed by school personnel to attend supplementary classes do so at district expense. Murfreesboro expects to be able to accomplish all of this within its regular per-pupil expenditure figures. When the suggestion was made that the extended services undermined the family, the mayor of Murfreesboro countered, "You've got it exactly backwards. These services support the family by making it possible for people to work without worrying because they know their children are involved in constructive learning."

5. We recommend that teachers be provided with the professional time and opportunities they need to do their jobs. "The daily working life of most teachers is one of unrelieved time pressure and isolation; they work, largely alone, in a classroom of 25-30 children or adolescents for hours every day. Unlike teachers in many systems overseas, who can take advantage of continuous, daily opportunities for professional development, American teachers have little time for preparation, planning, cooperation, or professional growth. Teachers need time to develop effective lessons. They need time to assess students in meaningful ways and discuss the results with students individually. They need time to talk to students and listen to them and to confer with parents and other family members. They need time to read professional journals, interact with their colleagues, and watch outstanding teachers demonstrate new strategies. Districts can provide this time in several ways; extending the contract year to pay teachers for professional development, using the longer day for the same purpose, or providing for the widespread and systematic use of a cadre of well-prepared, full-time substitute teachers."

6. We recommend that schools seize on the promise of new technologies to increase productivity, enhance student achievement, and expand learning time. "Technology is a great unrealized hope in education reform. Technology makes it possible for today's schools to escape the assembly-line mentality of the 'factory model' school. With emerging hardware and software, educators can personalize learning." Furthermore, "...the 'information superhighway' can reshape education as it will other areas of American life. The school revolution, however, depends both on a concerted investment strategy to help educators obtain these technologies and on educators confronting their reluctance to supplement the techniques of the 19th century (textbooks, chalk and blackboards) with the technologies of the 21st (CD-ROMs, modems, and fiber optics.) They must do so."

7. **We recommend that every district convene local leaders to develop action plans that offer different school options and encourage parents, students, and teachers to choose among them.** "Genuine, long-lasting reform grows from the grassroots. We are convinced that larger school districts can offer families a wide array of alternative school calendars by encouraging individual schools to adopt distinctive approaches. The more options, the better. No single configuration will satisfy every need. Districts of any size, with a sense of vision, boldness, and entrepreneurship can experiment with block scheduling, team teaching, longer days and years, and extending time with new distance-learning technologies."

8. We recommend that all of our people shoulder their individual responsibilities to transform learning in America. "No single recommendation can capture the essential point with which the Commission concluded the first chapter: learning must become a national obsession in the United States. There are no short cuts. Lightning will not strike and transform American schools if each of us acts as though the task belongs to somebody else. To put learning in America powerfully back on track every-

one will have to do more, make sacrifices, and work harder. The finger pointing and evasions must come to an end—up and down the line from the federal government to the family and student. Government should focus on results, not red tape. Higher education needs to get involved. The business world should keep up the pressure."

"Finally, we want to speak directly to the people with the greatest stake in the learning enterprise—parents, grandparents, aunts, uncles, foster parents and guardians and to teachers and students themselves.

To parents, grandparents, relatives, and guardians: With your support for the agenda for reform outlined in this document, success is assured. Without it, we do not know how the agenda can be achieved.

You may worry that new academic standards will add to your children's stress. That is not our intent. In fact, that is why we insist that time be made part of the standards discussion. Indeed, our hope is that schools will be more attractive, interesting, and lively places for both students and adults when time becomes the servant of learning. Schools should also be more hospitable to you, once teachers are released from the relentless treadmill of today's calendar, and the academic day is more attuned to your family's needs.

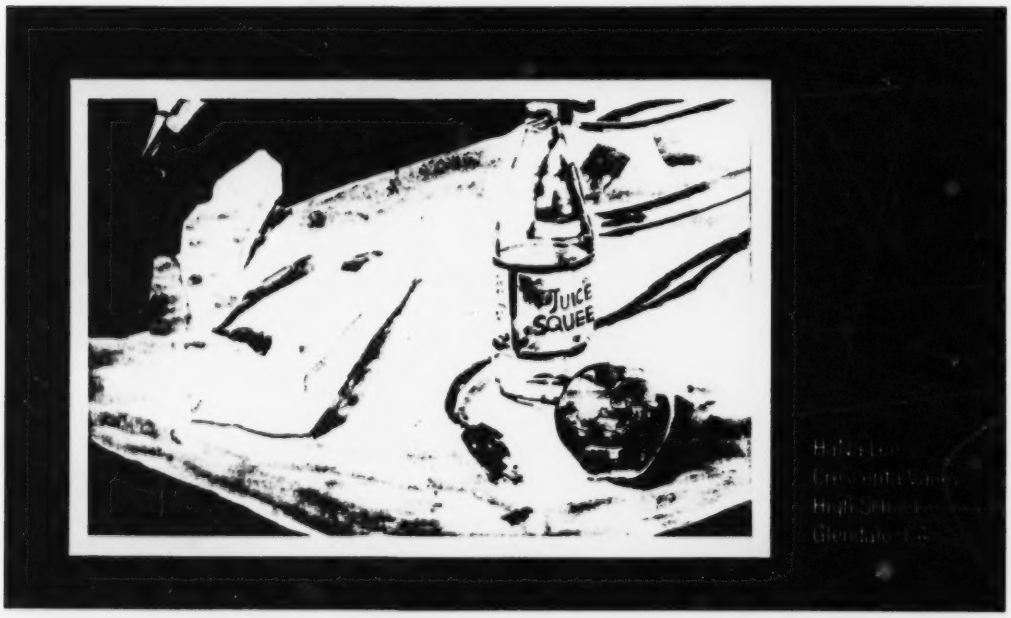
We know that your aspirations for your children are unlimited, no matter your circumstances or the difficulties in which you find yourselves. You can bring those aspirations within reach. We have little to offer other than the advice of experts. But their words bear repeating. Play with your children every day. Read to them every night. Make sure they see a doctor regularly. Take an active interest in the day-to-day activities of the school and the community. Check homework, turn off the television, and make sure that your teenagers are not working so long earning pocket money that they have no time for school. Above all, encourage your children.

What we ask, of course, takes time. But your reward will come as you watch your children become the kind of men and women you knew they could be.

To teachers: You are the inheritors of a tradition of service and scholarship stretching back through history. Your first obligation is to that inheritance.

If you accept minimal effort from students or colleagues or excuse shoddy performance, then you have fallen short, no matter how understandable your reasons. You cannot remain true to the tradition you bear by acquiescing to the social promotion of students who are not prepared for the next step.

Only parents and students have a greater stake than you in this debate. Clearly our proposals will make a huge difference in your working life. The nature of the change, however, remains to be worked out with your participation. This Commission consciously avoided



specifying a precise number of days in the school year, or hours in the school day, because we believe those issues must be worked out district by district and school by school.

Although we insist on breaking down the prison walls, it is not our intention to impose new demands on you without providing the support we know you need. It is up to you and your colleagues to put muscle and sinew on the reform framework outlined in this document. We think you will—not because we recommend it, but because you know it is right. You best understand that we are correct when we say learning is a prisoner of time.

Your satisfaction will lie in a more professional working environment. It will also be found in a lifetime following the progress of adults who achieved their full potential because of what you were able to do with and for them in the classroom.

Last, we say to students: We know that in the midst of today's pressures, your classes, school, and homework often appear to be distractions from the business of growing up. We were once in your shoes. We, however, were lucky. When we left school, we expected to face a promising future, and for the most part our expectations were met.

You, too, can make good if you are prepared to work at it. You may think your academic success depends on whether or not you are "smart." But academic progress, as our international friends understand, depends on hard work and perseverance. It is your job to learn, to become the 'worker' in your own education. You must understand that learning is never a passive activity; it is always active. Your success in school depends primarily on your own diligence. The returns on your efforts will be many, including the satisfaction of knowing that adults who complained about your generation were wrong—and you proved them wrong."

The Commission ends it report by reminding readers that "Time is money." The recommendations they have made will be expensive, but they feel that it will be money well spent. "In fact, a leading economist suggests that when we consider the costs of day care, the effects of summer learning loss, and the ultimate benefits of increased learning time, we can view any initial costs for such time as an investment with more promising payoffs than most other uses of tax dollars. In the final analysis, the true costs depend on what we think is important. If we value learning, the cost of 'doing it right the first time' is less than the expense involved in 'doing it wrong' and having to do it over again. As the American business community now understands full well, in the end quality costs less."

For anyone connected with education, this document is exciting and exhilarating. It should be a "must" on the reading list of every teacher, administrator, school board member, and anyone who cares about the future of our country.

Copies of the full report may be obtained from the National Education Commission on Time and Learning, 1255 22nd Street, NW, Washington, DC, 20202-5019. (202) 653-5019.

Jean Drum teaches GATE in Garden Grove, CA.

Little lady bug
Hiding under the big tree
Flies off and leaves me.

—Joy Vernon, Grade 3
Patton School, Garden Grove

The blade of grass
Swings swiftly in the wind
Such a blade of grass.

—Nathan Kurisu, Grade 3
Patton School, Garden Grove

I wish I were a rainbow
So I could shine high.
I'd like to be a different color.
I want to love you too.

—Caitlin Grieves, Grade 1
Patton School, Garden Grove

I wish I had a pot of gold
So I can be really rich.
I would buy lots of things,
But just for now I am happy
With what I have.

Jessica Jorgensen, Grade 2
Patton School, Garden Grove

What We Have Learned About Gifted Children

by LINDA SILVERMAN

1. There are many more highly gifted children than anyone realizes. We have found over one hundred children above 170 IQ, and fifty-four of them are above 180 IQ. According to the normal curve of distribution, there should only be seven children in (Colorado) who test above 170 IQ. The only study of children above 180 IQ included twelve children found between 1916 and 1939 (Hollingworth, 1942).

2. As many girls as boys (ages 3-12) test above 180 IQ; however, 98% of eminent individuals are male. This inequity has been blamed for thousands of years on the lack of innate intelligence in females. The test which proves that there are equal numbers of males and females in the highest IQ ranges is no longer in use in school districts; and IQ testing itself has come under serious attack. If the trend continues, there will be no way to prove that girls are as smart as boys because girls are socialized into hiding their abilities and valuing their appearance and social skills more than their intelligence and achievement.

3. Brothers and sisters are usually within five or ten points in ability. We studied 148 sets of siblings and found that over one-third were within five points of each other, over three-fifths were within ten points, and almost three-fourths were within thirteen points. Where one child in the family is found to be gifted, the chances are great that all members of the family are gifted.

4. Second children are recognized as gifted much less frequently than first-borns or only children. Even the first-born identical twin has a greater chance of being accepted in a gifted program than the second-born!

5. Parents' IQ scores, when known, are usually within ten points of their children's; grandparents' IQ scores are often within ten points of their grandchildren's.

6. Gifted children's IQ scores become depressed at approximately nine years due to ceiling effects of the test. The ideal age for testing is between four and eight.

7. Parents are excellent identifiers of giftedness in their children: 84% of the children who fit three-fourths of the characteristics in our intake procedure, according to parental judgment, test at least in the superior range. Over 95% show giftedness in at least one area, but are asynchronous in their development, and their weaknesses depress their IQ scores.

8. Giftedness can be observed in the first three years by rapid progression through the developmental milestones.

9. IQ test norms are biased against gifted children. The same raw score yields an IQ score for average children approximately **eight** points lower in 1991 than in 1960, whereas for gifted children the difference is **thirty-one** points—a loss of one IQ point per year. Because of their low ceilings, none of the current tests provides valid IQ scores for highly gifted children.

10. Many cases of underachievement are linked to chronic early ear infections (nine or more in the first three years), with residual effects of auditory sequential processing deficits. Spelling, arithmetic, handwriting, rote memorization, attention, and motivation to do written work are all typically affected.

11. Highly gifted children, creative children, mathematically talented children, children with attention deficits, learning disabled children, culturally diverse children, and underachievers are often visual-spatial learners who require different teaching methods. We have developed methods of diagnosing this learning pattern and effective strategies for teaching visual-spatial learners.

12. Gifted children with hidden learning disabilities (dual exceptionalities) are much more prevalent in the population than anyone realizes; one-sixth of the gifted children who come to us for testing have some type of learning disability—usually undetected before the assessment.

13. Children with dual exceptionalities usually have at least one parent with the same learning pattern. Visual-spatial learners and children with dual exceptionalities tend to get smarter as they get older and often become successful adults.

14. Over 60% of gifted children are introverted compared with 30% of the general population. Over 75% of highly gifted children are introverted. Introversion correlates with introspection, reflection, the ability to inhibit agression, deep sensitivity, moral development, high academic achievement, scholarly contri-

butions, leadership in academic and aesthetic fields in adult life, and smoother passage through midlife; however, it is very likely to be misunderstood and "corrected" in children.

15. Perfectionism, sensitivity, and intensity are three personality traits associated with giftedness. They are derived from the complexity of the child's cognitive and emotional development. According to Dabrowski's theory, these traits are indicative of potential for high moral values in adult life. The brighter the child, the earlier and more profound is his or her concern with moral issues.

16. Gifted girls and gifted boys have different coping mechanisms and are likely to face different problems. Gifted girls hide their abilities and learn to blend in with other children. In elementary school they direct their mental energies into developing social relationships; in junior high school they are valued for their appearance and sociability rather than for their intelligence. Gifted boys are often considered "immature" and may be held back in school if they cannot socialize with children their own age with whom they have no common interests.

17. Mildly, moderately, highly, and extraordinarily gifted children are as different from each other as mildly, moderately, severely, and profoundly retarded children are from each other, but the differences among levels of giftedness are rarely recognized.

18. Gifted children have better social adjustment in classes with children like themselves; the brighter the child, the lower the child's social self-concept in regular classrooms. Social self-concept immediately improves when children are placed with true peers in special classes.

19. There are more poor gifted children than there are rich gifted children. Therefore, when attempts are made to eliminate programs for the gifted on the basis that they are "elitist," it is the poor who suffer the most.

Dr. Linda Silverman is the director of the Gifted Development Center on the campus of the University of Denver, Denver, CO.

The Best Recent Brain Books for Educators

by ROBERT SYLWESTER

Recent dramatic developments in the cognitive sciences are moving us closer to an understanding of our brain's development, organization, and operation. This should lead to widespread discussions of the important issues that will arise out of these advances, and to the development of appropriate and effective educational applications of this knowledge.

As an educational leader, you'll need a functional understanding of these significant developments in order to: (1) read the growing scientific and professional literature in this field, (2) discuss, develop, and evaluate proposed educational applications, and (3) effectively teach students about brain mechanisms and processes. Without such knowledge, our profession will become prey to educational hucksters who will propose expensive programs they claim to be compatible with current cognitive theory and research.

The 25 books on this list, selected from 100+ published since 1990, provide a useful introduction to that professionally important information for educational leaders who have a limited background in the cognitive sciences, but who will be expected to make educational decisions that are sparked by new developments in the scientific world. I believe that these are the best books, and so they're a good beginning for your studies. All were written by respected scientists and science writers who can explain complex biochemical processes in non-technical terms. Don't be discouraged by any technical passages. You'll soon master the language and concepts of the cognitive sciences if you stay with it.

Imaging Technologies and Brain Theories

Brain imaging technologies have sparked the recent rapid increase in our understanding of brain functions, and leading researchers Michael Posner and Marcus Raichle's ***Images of Mind*** (1994, Scientific American Library) is a superb, beautifully illustrated explanation of the technology and its use in research and medicine. Most public and academic libraries get the Scientific American Library books.

We appear to be close to the emergence of a general brain theory that will revolutionize biology in the same way that Einstein's $E=MC^2$ revolutionized physics. Two Nobel Laureate superstars have already weighed in with thought-provoking controversial books, and others are on the way. The current thrust of the emerging theory is that far more of our brain's activity is regulated by innate processes that evolved therough natural selection than previously believed.

Francis Crick's ***The Astonishing Hypothesis: The Scientific Search for the Soul*** (1994, Scribners) lays out a research agenda for those in search of the biological substrate of consciousness, a necessary ingredient for any comprehensive brain theory. Crick, who won the Nobel Prize as the co-discoverer of DNA, focused on the visual system and visual awareness, and so his book is a fascinating explanation of how and what we see.

Gerald Edelman's ***Bright Air, Brilliant Fire: On the Matter of the Mind*** (1992, Basic Books) presents a comprehensive brain theory that's commonly called Neural Darwinism. Edelman won the Nobel Prize for his immune system discoveries. I synthesized his brain theory in the December 1993 Educational Leadership.

Eric Harth's ***The Creative Loop: How The Brain Makes a Mind*** (1993, Addison-Wesley) also proposes a general theory of consciousness, one that focuses on pathways that link our sensory system and cortex (the large rational top layer of our brain).

J. Allan Hobson's ***The Chemistry of Consciousness: How the Brain Changes Its Mind*** (1994, Little Brown) approaches consciousness from the perspective of his major discoveries about sleeping and dreaming. The book focuses principally on the biochemistry of consciousness and attention.

Merlin Donald's ***Origins of the Modern Mind*** (1991, Harvard) and Christopher Wills' ***The Runaway Brain: The Evolution of Human Uniqueness*** (1993, Basic Books) provide very useful background information on the evolutionary development of our brain.

Two excellent less technical books that discuss the emergence of the new brain theories, and what they might mean to educators are Robert Ornstein's ***The Evolution of Consciousness: The Origins of the Way We Think*** (1991, Simon and Schuster), and Michael Gazzaniga's

Nature's Mind: The Biological Roots of Thinking, Emotions, Sexuality, Language, and Intelligence (1992, Basic Books).

Specific Research Areas

Our Brain

Seven fine books focus on brain systems and structures, and Richard Restak wrote two of them. Restak is a great storyteller, so he uses stories to explain complex concepts. ***Receptors*** (1994, Bantam) explains how information moves among the cells in our brain, and the critical role that receptors play as they receive information from other cells. Restak's ***The Modular Brain*** (1994, Scribners) focuses on the modular theory of brain organization — that information is distributed throughout our brain. For example each of the various features/colors/textures that constitute a face are processed in a different brain area, and no one site combines them into the unitary face we perceive.

Michael Corballis's ***The Lopsided Ape: The Evolution of the Generative Mind*** (1991, Oxford University Press) is a more comprehensive and technical treatment of the general organization of our mind, and it's an excellent source of useful information. Stephen Kosslyn and Oliver Koenig's ***Wet Mind: The New Cognitive Neuroscience*** (1992, Free Press) also provides a comprehensive overview of our brain's various mechanisms and processes, within the context of the recent rapid growth of the cognitive sciences .

Pierce Howard's ***The Owner's Manual for the Brain: Everyday Applications from Mind-Brain Research*** (1994, Leornian Press) provides a non-technical summary of our brain and cognitive processes. It focuses more on the proposed educational applications of brain research than the other books on this list.

Robert Pool's ***Eve's Rib: Searching for the Biological Roots of Sex Differences*** (1994, Crown) is an excellent synthesis of our current controversial understanding of gender differences in brain organization and function.

Diane Ackerman, a poet, has written a delightful, non-technical, award-winning explanation and exploration of our sensory system and its cultural ramifications, ***The Natural History of the Senses*** (1990, Random House). It contains many marvelous ideas that imaginative teachers could incorporate into an instructional unit on the sensory system. The Public Broadcasting System will air a five-part TV series on her book in 1995.

Our Emotions

Diane Ackerman has just published another equally delightful book, ***The Natural History of Love*** (1994, Random House), which explores love in all its biochemical and cultural manifestations—and that leads us to books on our emotional system, a very exciting area of brain research. I synthesized our current knowledge of emotion in the October 1994 Educational Leadership.

Richard Cytowic's ***The Man Who Tasted Shapes*** (1993, Tarcher/Putnam) is a fascinating account of people who have synesthesia, a rare condition that gives them cross-modal sensory awareness (they see sounds, hear colors, etc.). Thus, such people provide a conscious window into our emotional system, a window that Cytowic marvelously explores.

Antonio Damasio's ***Descarte's Error: Emotion, Reason, and the Human Brain*** (1994, Grosset/Putnam) describes how he used modern computers to reconstruct the terrible brain injury that Phineas Gage suffered a century ago when a pipe propelled through his brain, but didn't kill him. The computer reconstruction answered some important questions about our emotional system. Damasio is a major researcher on emotions, and this is an excellent book on the subject.

Language and Memory

Ray Jackendoff's ***Patterns in the Mind: Language and Human Nature*** (1994, Basic Books) is an excellent examination of what we know about how children acquire language competence. He argues that much more is innate than previously believed.

William Calvin and George Ojemann's ***Conversations with Neil's Brain: The Neural Nature of Thought and Language*** (1994, Addison-Wesley) is a fascinating description of how neurosurgeons now treat serious epilepsy cases, and what their work has taught us about language and memory.

Steven Rose's ***The Making of Memory*** (1992, Anchor Books) is the delightful autobiography of a major memory researcher who did much of his work with chickens. He's a marvelous writer, and so he provides us with an unusual look into the daily life of a neuroscientist who was trying to understand the nature of memory by studying baby chicks.

Daniel Alkon's ***Memory's Voice: Deciphering the Mind-Brain Code*** (1992, Harper-Collins) also weaves autobiography and his memory research (with sea snails) in a very thoughtful description

of how the life work of a major reseacher can intersect with social issues that emerge out of his work

The Environment

Two unusual books examine the effects of the environment on intellectual development. Russ Rhymer's ***Genie: An Abused Child's Flight from Silence*** (1993, Harper-Collins) tells the tragic but somewhat optimistic case of a 13-year-old Los Angeles girl who had been raised from infancy without human interaction—strapped naked by her father to a potty chair in a back bedroom. Since she had no language skills when she was discovered, researchers sought to reverse her terrible deprivation by placing her with a caring family, and engaging her in a systematic program of language development. The new PBS NOVA program, ***The Secrets of the Wild Child*** (with extended videotapes of Genie) provides haunting, fascinating, and thought-provoking perspectives of Genie and her terrible childhood.

Emmy Werner and Ruth Smith's ***Overcoming the Odds: High Risk Children from Birth to Adulthood*** (1992, Cornell University Press) is the latest book in an incredible longitudinal study of 200 seriously at-risk children that was begun in 1955 and still continues. About 70 resilient children in the study developed into successful adults who are now living normal productive lives. This optimistic study identifies the protective factors in their lives that allowed them to escape their at-risk status and to achieve success in life.

So many informative and stimulating books to read! Happy reading!!

Robert Sylwester is a professor of Education at the University of Oregon (Eugene, OR 97403-1215) who focuses his studies on the educational applications of brain/stress theory and research.

Phone (503) 345-1452. FAX (503) 346-5174.

The Association for Supervision and Curriculum Development (Alexandria VA 22314-1453) will publish his book, *A Celebration of Neurons: An Educator's Guide to the Human Brain* in mid-1995.

Forest of Life

Lost is a little girl
Wandering through the forest of life.
Scared and naive she is deep inside,
Who will be there to catch her
When she stumbles?
Who will she go to when she's scared?
She falls into the arms of a friend
Who will lead her
Through the forest of life.

—Liz Ortiz, Grade 6
Patton School, Garden Grove

Space Mountain

My heart is pounding wildly
When I step up to the line
Then I go sit in the rocket shaped cart
Soon zooming out like a dart
Not seeing anything in the dark
As everything in the cavern passes by
Suddenly the ride stops...
I step into another line.

—Marc Gelfor, Grade 4
Patton School, Garden Grove

Fishing

Fighting
I try to reel it in
My stomach ties in a knot.
As I see that giant fin.
Now I have him
He's going to be my own.
"Wait," I stop, teary-eyed
And return him to his home.

—Adam Roa, Grade 4
Patton School, Garden Grove

Continued from page 1

Memory networks form their chemical connections at the synapse, the narrow gap that neurotransmitters cross when they move from the axon terminal of one neuron to attach to receptors on the dendrite or cell body of another neuron.

When our sensory system focuses on an object or event, it activates a variety of brain networks, each dedicated to processing a specific element of the object or event. For example, when we observe a rolling red ball, three different brain areas process the shape, color, and movement of the ball.

The initial mental representation of such an event appears to involve similar patterns that emerge in the activated related networks of neurons—principally in their synchronized firing rates and in the amounts and types of neurotransmitters their neurons release. The process isn't completely understood, but scientists believe that thought emerges out of such synchronized patterns of neural network activity.

Thought is thus an emergent property of our brain. Think of wetness as an emergent property of water. A water molecule is composed of two atoms of hydrogen and one of oxygen, but a single molecule of water isn't wet. Wetness emerges only when a critical mass of water molecules is present in the air or on a surface. So it is with our thought processes. Something causes a few neurons to fire rhythmically, and these neurons cause other neural networks to fire, and so on. Thought emerges when a critical mass of related neural networks begin to fire in a synchronized pattern.

The networks that represent an object or event continue to fire as long as we continue to attend to the phenomenon. Other neural networks may briefly activate as we analyze different elements of the object or event (e.g., noting a religious symbol on a person's clothing may activate thoughts related to the person's value system).

The development of a long-term memory begins when our brain determines that an emotionally important temporary event may reoccur. Suppose that a new student is assigned to your classroom. The same sets of neural networks that initially represented the various shapes that make up her face will fire every time you see her, because her face doesn't change much from day to day. The frequent activation of such interrelated networks and the realization that she'll be your student for some time will eventually spark physical changes in the synaptic connections within the relevant neural networks that will lower the threshold at which they fire (much like moving a thermostat setting closer to the current room temperature enhances the possibility that it will activate the furnace). Experience supports this; it doesn't take much input to trigger a strong memory, but it may take a lot of mental activity to activate a weak memory. This change allows the total interrelated network that represents your student to fire as a unit in rapid recognition of her when any part of the network is activated (e.g., when you hear her voice but don't see her, her face will instantly pop-up in your mind).

Memories are composed of constant and changing elements that vary in their ease of recall. For example, the shape of your student's face would remain constant over the year, but the clothing she wears would change from day to day. Your brain would thus create a much stronger memory of her constant elements than of her changing elements, and so you would easily recognize her face a year later. You might remember the kinds of clothing she tended to wear, but you'd have difficulty remembering what she wore on any given day when she was a student in your class

An individual neuron can be part of many memories, much as a light bulb in an advertising reader board can light up as a part of many different letters, digits, and words. Thus, our relatively small brain can process a vast number of related memories. Further, memory networks constantly connect to other related networks. When one network fires, it can activate other related networks (e.g., during a family argument, we easily recall other similar family arguments).

Our brain processes two general types of long-term memories. Declarative memories process factual information—knowing the name and location of an object or event. Procedural memories process automatic skill sequences—knowing how to do something (e.g., walk, talk).

How Sleeping and Dreaming Affect Memory

Since the development of a long-term memory requires the physical reconstruction of the synapses in the affected neural networks, it's necessary to shut down (or at least reduce) their activity during the process, much as a paving crew must detour traffic during the reconstruction of a road. Our brain does this through sleep, and perhaps during daytime periods of reduced activity in the relevant brain area. It reduces sensory/motor activity for about eight

hours every night while it reconstructs and resets the memory networks that have emerged out of the day's events. Thus, sleep enhances the creation, editing, and erasing of memories.

Memory networks must be constantly stimulated or else the neural synapses that were rebuilt to create a network will revert back to their original state, and the memory network will disintegrate. We call it forgetting. Some researchers believe that dreaming helps to extend the life of important survival memories that aren't sufficiently activated during normal daytime activities (Hobson, 1989).

The brainstem is the finger-size structure at the base of our brain through which all sensory-motor information passes. Every 90 minutes, during a sleep period called REM Sleep (rapid eye movement), certain brainstem structures begin to fire randomly into the cortex, the large deeply folded top layer of our brain where factual (declarative) memories are stored. It's as if sensory information were entering our brain when it isn't.

Whenever this random firing activates a memory network, however, what occurs in our mind is much like what occurs when we unexpectedly hear the word banana. We instantly see a banana in our mind, even though no banana is present. The sound memory of banana activated the sight memory of banana. Thus, during these 4–5 nightly dream periods (which range from 10–40 minutes in length), our brainstem constantly and randomly activates memory networks. It's somewhat like a circuit-testing process.

Our mind assembles this random activity into the unconscious and often bizarre stories we call dreams—trying to make sense out of random nonsense. If the dream gets too emotionally intense (often around 3 A.M.) we wake up and end the dream. This two hours of nightly dreaming (700+ hours a year) maintains many of the important memories of things that don't occur often in real life (e.g., escaping from danger, remembering relatives who don't live nearby). The more connections a memory has to other memories, the more apt it is to be activated by this nightly random firing. The sexual and violent content of dreams tends to be high because our sexuality and survival are so closely tied to many aspects of ourself—and so to many of our memories.

How Our Culture Maintains Important Memories

Although dream periods and normal daytime activities allow animals to maintain the relatively few memories of the survival strategies they must develop, we humans live in a much more complex social environment. We can't depend on random dreaming to maintain all the important memories that we develop.

What we humans appear to have done is to adapt the brain's efficient procedural memory system for activating motor skill sequences to our human brain's need to efficiently recall the combinations of facts that comprise our declarative memory. Thus, we've created a variety of storytelling formats that efficiently string together the related factual objects/events of a remembered experience. In a procedural memory, each action in a skill sequence automatically triggers the next action (think of a series of falling dominoes), and this simplifies the recall and coordinates the action sequence.

Similarly, stringing the separate objects/events of a remembered extended factual experience into a logical sequence (such as the order in which vacation events occurred) places each subsequent event into the close context of the previous event, and context enhances recall. Thus it's biologically easier to use a narrative format to remember several sequential events that occurred during an experience than to try to remember the events in isolation from each other. We can thus consciously begin a story and let it logically and automatically unfold—just as our first conscious walking steps activate the subsequent automatic steps.

Cultural Memories

Metaphoric forms of mass media provide us with many narrative opportunities to consciously stimulate the stringed cultural memories that we want to maintain. We go to a theater to see a film that we believe will focus on something that's personally important. We get comfortable; the lights go down; conversations stop; and film images and sound magically and sequentially appear. We soon find ourselves caught up in the events depicted on the screen, and personal memories related to the story suddenly pop up in our mind.

So it is with novels, TV programs, songs, games, and pageants. We consciously seek out those that we hope will stimulate our memories of broad cultural issues that we consider important. It's like we're seeking out dreams while we're awake.

The most powerful metaphoric experiences are those that focus on very important cultural issues, but that define the story's characters and

locations somewhat loosely, so that many people can easily identify with the issues the story explores. The Parables that Jesus told are a good example. Most people learn the stories during childhood, but discover their deeper meanings as adults. An altruistic act could spark the recall of the story of the Good Samaritan, and over time increasingly deeper connections could evolve between the parable itself and our life experiences.

Similarly, the songs of our adolescent years often become the beacons of our adult life, since they help us to recall the important developments of our adolescence. We often play such records and flock to nostalgic concerts to relive the memories in the extended reverie of song. The song slows down the message so that we can savor all the emotions of the experience.

Personal Memories

Mass media tend to focus on broad social concerns, but many of the memories we want to maintain are highly personal, and are not apt to be turned into a novel or film. We maintain such memory networks informally through conversations with friends who shared the experience or who had similar experiences. Families get together to recall important events. We'll converse with anyone who is willing to talk about a topic of mutual interest—each person's story or comment in turn sparking a contribution from the other person.

When we listen to another person's story and a related experience suddenly pops-up in our mind, we tend to quit listening to the other person's story and focus our thoughts on ours—and then we insert our story into the conversation at the first opportunity. Schrank (1990) argued that we don't listen to the stories of others to learn about their experiences, but rather in the expectation that the interaction will enhance the maintenance of our own related memories.

The value of a long-term relationship may reside in the constant availability of a storytelling partner who is willing to help recall mutually important events. The furnishings and art in a couple's home are historical artifacts that spark memories that define the relationship. The tragedy of the dissolution of such a relationship may well lie in the irreplaceable loss of the common history. The memories become vulnerable when the conversations cease.

How Schools Maintain Cultural Memories

Much culturally important information doesn't come up in dreams, mass media, or during meal conversations—for example, the multiplications tables, how to spell accommodate, the names of countries and their capitals, how to compute the area of a circle. Our society has created schools to ensure that students have the opportunity to learn such culturally important information, and to test their memories in simulated and real life settings.

This suggests that a school functions somewhat like daytime sleeping and dreaming. Recall that six hours (75%) of our nighttime focuses on the creation and editing of memory networks, and two hours (25%) involves dream periods in which the networks are randomly activated and organized into dream stories.

Sounds a lot like school. Teachers tend to focus more of their time/energy on teaching new information (i.e., creating memory networks), and less on using that knowledge in social problem situations (e.g., discussions, games, simulations, role playing, creating stories, music, art).

Further, students tend to view school as a somewhat surreal and random experience. Spelling follows arithmetic or vice versa; we suddenly lash out at a student; someone throws up; it's time to go to the library; it's anyone's guess whose hand will go up when we ask a question, or even what question we'll ask...

It's the student's task to make sense out of all this nonsense, to translate and string the seeming curricular randomness into a coherent view of our culture. Unfortunately, our culture seems to value random facts, and schools tend to reinforce this. For example, the student with the best command of the facts that are the most obscure, and thus the least important, will tend to score the highest on an objective test—and the same thing holds true for TV quiz show winners. We love to play Trivial Pursuit, Scrabble, crossword puzzles and the like, bouncing random facts around in our mind.

Our task as educators, however, is to help our students begin to find relationships between the somewhat random and often trivial factual experiences of normal life and the fewer enduring principles that define life—and then to help them to create and constantly test the memory networks that help to solidify those relationships. Comprehension comes from stringed connections, not from the randomness of such activities as multiple choice tests. Portfolios are a good example of an emerging evaluative format that asks students to select and string together their important experiences and artifacts.

Story Telling and School

The memory theory and research presented above suggests that the best school vehicle for this search for relationships is storytelling (as a broad concept that includes conversations, debates, role playing, simulations, songs, games, etc.). The brightest students are the ones who always have their hand in the air to expand the discussion through stories about their own experiences—to maintain and extend their own memory networks through active recall, as it were. It's as if their brains know how important it is for them to act on their knowledge and beliefs, to not sit passive and let their classmates make the mental connections.

It isn't enough for us to merely forcefully forge new memory networks in our students. We must constantly help them to test their memories in real and metaphoric life settings that encourage stimulating interaction, else all our efforts to create the memories are for naught. We can't expect the randomness of dreams and mass media to maintain our students' memories of socially important information. Memory is contextual.

Memory maintenance is strongest when we act and talk, not when we observe others do it. Watching a film doesn't help to maintain our related memory networks if we don't get emotionally involved in the film. We have to enter the story through a character, and allow our own story to progress simultaneously in our mind as the related film story progresses on the screen—and then talk out the two versions with our fellow filmgoers after the experience.

So it should be in the classroom. The students, and not the teacher, should get most of the available time to tell their stories—to each other in class discussions and in small groups, to themselves and others through written journals and filmed videos...

Talented and gifted students tend to have the mental ability to take a simple (even random) event and find relationships between it and some curricular issue—to find patterns that connect stories, the essence of metaphor. They thus can become a very useful classroom resource for beginning story lines and moving them along.

But this can only happen in a classroom in which the teacher constantly encourages the students to use a variety of formats to tell their stories to each other and to themselves. Be that kind of teacher.

Suggested Readings For General Readers

Alkon, D. (1992). Memory's Voice: Deciphering the Mind-Brain Code. New York: Harper Collins.

Allmann, W. (1989). Apprentices of Wonder: Inside the Neural Network Revolution. New York: Bantam.

Bolles, E. (1988). Remembering and Forgetting: Inquiries into the Nature of Memory. New York: Walker.

Campbell, J. (1986). Winston Churchill's Afternoon Nap: A Wide Awake Inquiry into the Nature of Time. New York: Simon and Schuster.

Hobson, J. A. (1989). Sleep. New York: Scientific American Library.

Johnson, G. (1991). In the Palaces of Memory: How We Build the Worlds inside Our Heads. New York: Knopf.

Rose, S. (1992). The Making of Memory. New York: Anchor, Doubleday Books.

Schank, R. (1990). Tell Me a Story: A New Look at Real and Artificial Memory. New York: Scribners.

Schank, R. (1991). The Connoisseur's Guide to the Mind. New York: Simon and Schuster.

Sylwester, R. (June, 1995). A Celebration of Neurons: An Educator's Guide to the Human Brain. Alexandria VA: Association for Supervision and Curriculum Development.

Sylwester, R. (October, 1994) "How Emotions Affect Learning," Educational Leadership.

Sylwester, Robert, and J-Y Cho. (December, 1992) "What Brain Research Says About Paying Attention," Educational Leadership.

Sylwester, R. (1991) "How Our Brain Is Organized Along Three Planes to Process Complexity, Context, and Continuity," a chapter in Developing Minds: A Resource Book for Teaching Thinking, Arthur Costa, editor. Alexandria VA: Association for Supervision and Curriculm Development).

Sylwester, R. (October, 1990) "Expanding the Range, Dividing the Task: Educating the Human Brain in an Electronic Society," Educational Leadership.

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COMMUNICATOR

PROFESSIONAL DEVELOPMENT

Teaching Gifted Learners: A Specialized Area of Professional Development

by BARBARA CLARK

All children are deserving of the highest quality of instruction possible. Such instruction should include the ability of the teacher to develop a learning environment that is attractive, organized, and conducive to learning. Such an environment would be rich in materials at many levels of learning, have simultaneous access to many activities that are varied and multisensory, and be flexible in grouping based on the needs of the learner. It would elicit students' responsibility, choice, trust, and cooperation. The teacher in this environment would manage the classroom effectively, exhibit enthusiasm, initiative, resourcefulness, and creativity. Teachers in every classroom need the ability to differ the pace of instruction, integrate the intellectual processes, assess the knowledge and understanding of the learner, and then present instruction so that each learner can benefit and progress to the highest level possible.

It is from this base of quality education that gifted students can best be served. However, despite the belief of many members of the educational community, quality instruction alone is not sufficient to meet the needs of gifted learners. In a recent communication, Dr. Joseph Renzulli, Director of the National Research Center on Gifted and Talented Education, states that while all teachers can and should

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Differentiated Professional Development

by SANDRA N. KAPLAN

The need for professional development seldom is questioned. The type and scope of professional development activities always is under scrutiny. Traditional professional development get-togethers or large group sessions have been challenged by those who advocate a more individualized approach to educating professionals. The top-down structure to plan professional development activities has been challenged by educators. Many of them believe their involvement in designing rather than merely participating in experiences could enhance the quality of professional development and themselves professionally. Contemporary literature is replete with discussions about changing the what, when, and how of professional development.

Differentiation, the concept of modifying curriculum to respond to the individual differences among students, also can be applied to professional development experiences to modify them to accommodate the individual differences among teachers. Thus, the commonly acknowledged practice of differentiation related to gifted education becomes the basis to rethink professional development. Differentiation should guide the type and scope of learning experiences available to gifted students as well as the learning opportunities available to those preparing to teach gifted students.

Differentiated professional development is based on these assumptions:

Assumption One:

The focus of professional development

Continued on page 34

PRESIDENT'S COLUMN

by MARTHA FLOURNOY

Parents are their children's first teachers. But at a young and impressionable age, they are sent off to school where formal teaching occurs. Parents and the community must demand that our children's teachers receive the opportunities for training necessary to meet the needs of all children—including the gifted.

For too long it has been assumed that gifted kids can get it on their own and that no special training was needed for their teachers. This assumption is not valid as born our by considerable research in the field. The State of California still does not require a specialized certificate for teaching gifted students, though gifted students are as far form the norm as those students with mental retardation. Very few institutions of higher learning provide easily accessible training for teachers of the gifted.

Therefore it is imperative that as an organization and as advocates for gifted learners, we support all efforts to give teachers the time and the resources to do the best job they can. With the increasing demands being placed on our schools, teachers need time to collaborate, coordinate, and concentrate on the enormous tasks and responsibilities that they face on a daily basis. Learning from others, sharing successes and failures, as well as having time to attend workshops, classes and seminars are all activities that should be encouraged and supported. These opportunities provide our teachers with the kind of experiences which encourage growth and extension within the teacher and, consequently, the students. The teaching profession's commitment to excellence cannot be satisfied by stagnancy. By providing tools, encouragement, and time, the community actively participates in the continuous professionalism of teachers and the subsequent nurturing of our children.

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CALENDAR

June 24, 1995
Planning Committee for 34th Annual CAG Conference, meets at the LAX Hilton and Towers. For information, call the CAG office, 415-965-0653.

July 30–August 4, 1995
11th World Conference on Gifted and Talented Children, *Maximizing Potential: Lengthening and Strengthening Our Stride*, Hong Kong.

September 8–10, 1995
CAG Board of Directors, Santa Clara Westin Hotel, Santa Clara.

October 13–14, 1995
Teacher Institute on Differentiating the Curriculum for Gifted Students, San Rafael Holiday Inn, Marin County. For information, call the CAG office, 415-965-0653.

November 8–12, 1995
National Association for Gifted Children, 42nd Annual Convention, Tampa, Florida.

March 1–3, 1996
California Association for the Gifted, 34th Annual Conference, *GATE Connections: Computers, Curriculum and Community*, LAX Hilton and Towers, Los Angeles.

March 3, 1996
CAG Parent Conference, LAX Hilton and Towers, Los Angeles.

April 12–14, 1996
CAG Board of Directors, Sacramento Hyatt Hotel, Sacramento.

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Teacher Training for Gifted Education Programs in San Diego

by Elinor Ruth Smith

One gauge of the quality of a gifted program is the kind of training opportunities it provides for its teachers and other staff. Given the scarcity of preservice training in the education of the gifted, school district staff development and training for teachers of the gifted is imperative. This training, whether conducted by individual districts, county offices of education, consortia of districts, local universities, or combined efforts, needs to be comprehensive and purposefully included in the school district's planning. At the same time, training of teachers of the gifted must be seen as only one, albeit the major one, of several components of an overall staff development process which is designed so that all those involved with the program in any way gain the understandings and skills needed to carry out their roles effectively.

In school systems where increasingly less support is provided for leadership and coordination of gifted programs, and where responsibility for teaching gifted students is spread among greater numbers of teachers, effective training becomes an even more critical need. For many of the teachers, gifted students represent only one of several special needs they must learn how to accommodate. Furthermore, where full inclusion and heterogeneous grouping guide student placement, the needs of gifted students often appear to be the least pressing and are most likely to be ignored. Teachers want help, they want it fast, and they want it to be practical.

Even when inclusion and heterogeneous grouping are not major issues affecting classes for gifted students, the gifted population itself is becoming more heterogeneous as districts do a better job of finding gifted potential in students from diverse backgrounds—socioeconomic, cultural, racial/ethnic, and linguistic. The role of the teacher of the gifted is expanding to include working with those who have exceptional ability but who may not yet, for a variety of reasons, be successful students. Both new and previously certified GATE (Gifted and Talented Education) teachers want strategies for working with the wide range of gifted students who now make up their classes.

What, then, should be included in training for those who are preparing to be teachers of the gifted? What are other necessary components of staff development for gifted education programs? Here are two examples of existing, successful training programs.

San Diego City Schools GATE Teacher Certification Program

San Diego City Schools (SDCS) has long had a model teacher certification program. In 1979 the district instituted a competency-based teacher certification process. All teachers whose assignment is half-time or more in the education of gifted students are required to participate in this program or demonstrate otherwise (with a university certificate or degree, for example) their ability to meet the required competencies. The program is continually adjusted to incorporate new knowledge in gifted education, changes in student populations and their needs, and changes in district practices which impact all students. In recent years this basic training for teachers has been modified several times.

The Teacher Certification program planned for 1995-96 consists of six modules, each with a different purpose and goal. There are, in all, eleven after-school and Saturday classes and nine districtwide GATE staff development and parent education sessions which must be attended by participants in the certification program. The modules are as follows:

I. SDCS GATE Program: all aspects of SDCS GATE Program including philosophy and goals; design and components; laws, regulations, and policies; funding; student identification and certification; teacher training; parent education and participation.

II. Characteristics and Behaviors of Gifted Students: varied expressions of gifted characteristics and behaviors in diverse populations and the concomitant needs for curricular modifications.

III. Approaches to Differentiation—Teaching Strategies: differentiation and the role of teaching strategies (Taba, Parnes, Kohlberg, etc.); learning and practicing the strategies.

IV. Approaches to Differentiation: Kaplan Thematic Interdisciplinary approach to cur-

riculum differentiation; planning and teaching a unit.

V. Specialized Units: experienced GATE teachers present specialized units and lessons.

VI. Districtwide GATE Staff Development and Classroom Visits: an area parent meeting, four distinguished lectures by national experts, a GATE student humanities seminar, a GATE District Advisory Committee meeting, a visit to the classroom of a GATE mentor or thematic interdisciplinary demonstration teacher, and a tour of the section of the district Instructional Media Center which stores and lends materials which support curriculum differentiation for GATE students. Though not required, participants are urged to take part in the annual conferences of the Association for San Diego Educators of the Gifted and the California Association for the Gifted.

Other Components of San Diego's GATE Program Training and Staff Development

In addition to certification training for those teachers who will provide differentiation for students, continuing training for certified teachers is important. San Diego City Schools offers several options. The Distinguished Lecturer series brings to San Diego nationally known experts in gifted education. Their evening lectures are open to all GATE teachers, administrators, and parents. Prior to the lectures, GATE teachers of the highly gifted are invited to interact in small seminar-like sessions with the speakers. Another project, the Thematic Interdisciplinary Demonstration Project, offers staff development on two levels, both for the demonstration teachers, who received training from Sandra Kaplan, and for those GATE teachers who visit the demonstration classrooms. And finally, there is ongoing training by GATE mentor teachers through the Mentor Teacher Program.

Other kinds of training are necessary to support what well-trained teachers do in the classroom. Student referral, the process of identification and certification of students, the choosing of teachers, organization of the programs at sites, and parent education are all aspects of the program which need to be carried out by knowledgeable people. Well done, they support the program and what teachers are able to do in the classroom. Poorly done, they can seriously weaken the program, no matter how skilled the classroom teachers. These areas need to be addressed through training.

Staff development for those doing the assessment and certification of GATE students is a vital part of the GATE program. In San Diego, with a recent merger of GATE and Special Education under the Exceptional Programs Department, all the psychologists previously assigned to either the gifted or the special education program are now responsible for both kinds of testing at their assigned schools. This has meant the training of all psychologists to identify, test, and certify GATE students.

Two other crucial components of staff development have been lost temporarily due to cutbacks in staff—awareness training in recognizing gifted potential for all school staff members responsible for student referral and program management training for site administrators. The former is critical, especially at a time when the district is making great strides in the identification of students from underrepresented populations. Without broad staff understanding of varied expression of gifted potential in children from all backgrounds, it is difficult to ensure the inclusion of atypical students in the referral process.

Likewise, where site administrators have little awareness of critical issues in gifted programming, there is always the chance that administrative decisions at the site will overlook those things that support strong program development and services to students. As district-level coordination of the program is eroded, more responsibility falls on the shoulders of site administrators and staff who, therefore, need greater knowledge and understanding. These are areas of staff development the district needs to devise ways of reinstituting.

Though not strictly considered to be staff development, parent education is included here because it is a vital part of a strong gifted program. San Diego offers district-wide parent education sessions in all areas of the city with presentations by staff and parents. To reinforce these and deal with the particulars of their programs, schools are encouraged to hold parent meetings at their sites. In addition, the Distinguished Lecturer series is widely advertised and well attended by parents of gifted students. As an aid to communication with parents, each site is asked to name a parent representative to the District Advisory Committee for the gifted program. That body functions not only as an advisory group but also as a vehicle for educating parents about the workings of the program and about issues of which they should be aware, thus providing a strong base of advocacy for the program.

An Alternative to District Teacher Training

As mentioned earlier, teachers who do not participate in the district teacher certification program may be certified to teach gifted youngsters by demonstrating their ability to meet San Diego's competencies. One way of doing that is by obtaining a university certificate in gifted education.

The University of California at San Diego (UCSD) offers a Professional Certificate in the Education of the Gifted and Talented through University Extension. This program, patterned after the GATE Certificate Program at UC Riverside, offers training for educators who want to teach and develop programs for gifted and talented students. The curriculum is designed for those new to gifted education as well as for experienced educators who wish to add to their professional knowledge and skills.

The required coursework, four three-unit courses, offers a comprehensive examination of characteristics and identification, curriculum differentiation, teaching strategies, and program development for the gifted. Each course addresses the latest pertinent research in gifted education and its application to schools and classrooms. Several elective courses, three units required, feature investigation and study in such specialized areas as technology and the gifted, serving the second-language gifted student, and giftedness and underachievement.

Courses may be taken in any order. Certificate enrollees explore gifted education within the context of such current major issues as identification and program services for students from diverse cultural, linguistic, and racial/ethnic backgrounds; inclusion; school reform; excellence versus equity; and California's curriculum reforms.

The Professional Certificate in the Education of the Gifted and Talented is an important alternative, as few school districts have the resources to provide this kind of staff training themselves. Not only may educators enroll in the program as individuals, but the program can be brought to a school district and taught under district auspices for its staff.

Today's Training Needs

Depending on enrichment activities alone or just taking students faster further through the core curriculum will not provide the kind of differentiation today's gifted students need, nor can packaged programs, enrichment materials, and kits. All these things can supplement a teacher's well thought out plans, but they cannot take the place of a skilled, well-trained teacher. Training for today's teachers of the gifted has to be more in-depth, more complex, more rigorous, and more purposeful. Becoming a good teacher of the gifted requires both instinct and training. It cannot happen overnight. A strong basic training like San Diego's GATE Certification Program is a good beginning, providing a solid base on which to build.

Elinor Ruth Smith is a consultant in gifted education in San Diego, CA.

Demonstration Classrooms: An Approach to Professional Development

by SANDRA N. KAPLAN

"Where can we see this being done in a classroom?"
"I'd like to see a real *teacher* really *do this with* real *kids!"*

These comments often are made by teachers either during or after an inservice experience. They reflect several concerns: (1) the need for teachers to see in practice what they have heard in theory, and (2) the skepticism of teachers toward the efficacy of an idea or new strategy.

The need to make concrete the abstractions presented during inservice has demanded consideration of new forms and formats for staff development. Among these considerations is the concept of a demonstration classroom model for professional development. Based on the understanding that firsthand knowledge through observation is a significant medium to educate teachers, the demonstration classroom becomes *the* site for inservice. This on-site, in-classroom form of professional development eradicates the barriers that often inhibit the teacher's acceptance and ultimate implementation of the idea presented during inservice sessions. The demonstration classroom model allows teachers to observe the execution of an idea in the context of the actual setting in which it is to be used.

Under the coordination of Elinor Smith and direction of Dave Hermanson, San Diego City Unified School District GATE program and with the consultation of Sandra Kaplan, University of Southern California, a district-sponsored set of demonstration classrooms were developed across grade levels and school populations.

The major focus of these demonstration classrooms is to provide an exemplary setting to illustrate the implementation of a thematic interdisciplinary curriculum which incorporates examples of differentiation—depth, complexity, and novelty. The development of the demonstration classrooms was accomplished in phases.

Phase 1 Announcement to teachers regarding the program and responsibilities of teacher of demonstration classrooms and submission of an application to participate. Selection of demonstration classroom teachers.

Phase 2 Provision for professional development to demonstration class-

room teachers during a period of one year. Preparation of curriculum for individual classrooms and design of each classroom environment with appropriate signs, charts and learning centers.

Phase 3 Dissemination of publication announcing the demonstration classroom program, describing the curriculum and defining procedure to visit sites, obtain substitutes, etc.

Phase 4 Visitations to demonstration sites including observation guides and debriefing with demonstration classroom teachers.

Guiding the observations of teachers during their visits to the demonstration classroom is an important feature of this model of inservice. To facilitate focused and productive visitations, an Observation Form is used to direct teachers' perceptions of the teaching/learning process and classroom environment and to stimulate their inquiry during the debriefing session following the observation. Areas to observe include flexible grouping, deductive and inductive reasoning lessons, independent learning, and opportunities for interdisciplinary learning using the theme and generalizations.

Perhaps the best summary of the intent and values of the demonstration model is expressed by David P. Hermanson, Assistant Instructional Team Leader, GATE:

"An intended outcome of the project is growth in teachers' abilities to work successfully with GATE students, both high ability low-achieving students and those whose capabilities are more nearly realized, as well as with all other students for whom they are responsible. By presenting opportunities to see such approaches in use in classrooms throughout all areas of the district and at all levels, the GATE Program is sharing strategies which can help schools and teachers improve teaching and learning, a major goal of our district."

Dr. Sandra Kaplan is Past-President of CAG and Clinical Professor, School of Education, University of Southern California. She has been a consultant to San Diego City Schools GATE program.

San Diego's Thematic Interdisciplinary Demonstration Project

The publication, *Thematic Interdisciplinary Demonstration Project*, was developed by Elinor Ruth Smith. Each project teacher submitted the following types of information for the document.

School: Muirlands Middle School
Teacher: Karen Moffitt
Grade: 6
Kind of GATE Class: GATE Cluster (Reading/Language Arts Block)
Team Partner: Martha Scott (Social Studies and Math)
Disciplines Emphasized: Social Studies, Language Arts, and Art
Theme: Survival
Generalizations:
Genralization One: Survival reflects an internal and an external struggle. This generalization will be used throughout the study of early man. Students will analyze the importance of human choice as a factor in survival as they look at the interaction of people, places, and circumstances. They will see how survival choices affected humankind's relationship with the earth, patterns of daily life, and family structure. Novels such as Maroo of the Winter Caves, Walkabout, Hatchet, Julie of the Wolves, Slake's Limbo, and Ghosts I Have Been will be used to extend this view of the survival theme. Survival themes in poetry and art will also be explored. In addition, students will look at survival in terms of their personal lives and the lives of others (biography and autobiography).

School: Linda Vista Elementary
Teacher: Yolanda M. Riquelme
Grade: 2–3
Kind of GATE Class: Bilingual Spanish, Projects Excel and First Steps
Theme: Change (Cambio)
Generalizations:

- Change is irreversible. (El cambio es irreversible.)
- Some changes are positive and some are negative. (Algunos cambios son positivos y otros son negativos.)

How to Prepare Teachers to Meet the Needs of Gifted Students

by DANA REUPERT

Teachers at all levels, kindergarten through twelfth grade, need to know, understand, and appreciate the challenges of working with gifted children. As an instructor at UC Riverside Extension, in the GATE Certificate Program, I value the importance of teacher preparation. The educational certificate program is offered to help teachers meet state and district training requirements for teaching gifted students and to keep teachers updated on current research and curriculum development in this field.

Required courses include: Teaching the Gifted and Talented: Guidance and Goals of the Program; Approaches to Curriculum and Design; and Recognizing Individual Differences. Offered for elective credit are courses such as computers, multiple intelligences, and content areas.

First, Guidance and Goals of the Program

Special guidance for children is necessary, since children are not all alike, and many times the nature of their differences is extensive enough to make this important. Research provides new insights into the uniqueness of children who demonstrate abilities well beyond those of their age-mates. This course focuses on current information in this area, as well as effective strategies for using this knowledge.

Expected Learning Outcomes

Participants will:

a) Be aware of updated GATE legislation.
b) Be able to identify characteristics of gifted and talented children and to prepare classroom learning activities that provide depth, complexity, novelty, and acceleration.
c) Assess ways in delivering programs that can best meet the needs of gifted students.

Topics

a) Overview of GATE Legislation and Identification of the Characteristics of Gifted and Talented.
b) Building Self-Esteem, Fostering Autonomy, Developing Creativity, and Leadership.
c) Program Delivery and Options that Best Meet the Needs of Gifted and Talented Students.

Second, Approaches to Curriculum and Design

Differentiation strategies and the cultivation of critical thinking skills are emphasized within the framework of the thinking, meaning-centered curriculum.

Expected Learning Outcomes

Participants will:

a) Review history of GATE in California.
b) Utilize effective questioning strategies.
c) Learn to integrate higher level thinking skills into regular classroom curriculum.
d) Differentiate instruction for gifted students.

Topics

a) Instructional Techniques and Questioning Strategies.
b) Differentiating Instruction in Regular Classroom.
c) Curriculum Strategies for Implementing Critical Thinking into the Classroom.
d) Creativity and How to Nurture It.
e) Methods for Developing a Thinking, Meaning-Centered Curriculum for Gifted Students.
f) A Research Model for GATE Students.

Third, Recognizing Individual Differences

Familiarity with clusters of characteristics common to gifted people will provide a foundation for recognizing and understanding the individual differences and varied profiles gifted students may exhibit. Attention is given to differences in learning, cultural profiles of intelligences, exceptionalities, and achievement levels.

Expected Learning Outcomes

Participants will:

a) Be able to recognize and understand the impact of the individual differences of gifted students.
b) Understand the implications for assessment, programming, teaching, and parenting.

Topics

a) Views of Intelligence and Giftedness.
b) Factors Influencing Recognition of Gifted Abilities.

Dr. Sue Teele, Director Education Extension, initiated this GATE Certificate Program in 1981. Both she and Ms. Eileen Johnson, Program Representative Education Extension, have been instrumental in maintaining the high standards of the program. Since 1987, close to 1,000 students have completed the UC Riverside GATE Certificate Program.

Dana Reupert is past GATE Coordinator for the Riverside USD and presently an elementary principal in that district.

Needed: Effective Teachers for Gifted Learners in Regular Classrooms

by CAROL ANN TOMLINSON

Amidst the controversy about whether gifted learners are best served in homogeneous or heterogeneous settings, it is easy to overlook the fact that what will make the deciding difference in the effectiveness of either setting is the teacher who leads children on a pilgrimage of the mind. An effective teacher—for gifted learners, as for others—a magical teacher, is one who crafts a "love triangle" between himself or herself, the child, and the ideas around which classroom days are constructed.

There are certain qualities of an educator which predict success in establishing "regular" classrooms in which all children—including advanced learners—find themselves and find intriguing ideas in themselves through exploration. Some of the characteristics are qualities of mind, some have to do with what it means to establish communities of learning in which all members merit full attention, some have to do with capacities required to orchestrate a learning environment in which many "instruments" find a way to both "play their own music" and to "play together." Much as we might like to believe otherwise, not all teachers have the skill and/or will to establish such classrooms.

In looking at development of expert teachers who deal effectively and energetically with broad academic diversity in a single classroom, there are a number of competencies and talents which teacher educators—whether preservice or inservice—should seek and develop.

Habits of Mind

A teacher likely to engage an advanced learner with knotty issues and ideas, a teacher likely to cast that learner into a mode of sensing, defining and solving dilemmas is a teacher who...

—is a thinker with a mental itch that only more learning can scratch. Such a teacher creates those "itches" in learners and catches them from learners as well. It's a sort of contagion of ideas which is irresistible.

—has a rich and expansive store of domain knowledge. It's a requirement for telling the stories that bring alive the old and abstract for minds which are young and may yet be concrete. It is also a requirement for stretching a mind which has traveled further than its chronological age would suggest.

—understands the conceptual framework of a subject. That is a necessary capacity in order to ensure that all learners develop meaning from their studies (as opposed to accumulating trivia), to ensure that struggling learners focus on that which is powerful about a subject, and to finding launch pads to propel advanced minds into meaningful extensions of classroom explorations.

—knows how to adjust levels of complexity, abstractness, independence, and pacing in order to provide learning experiences which are neither boring nor anxiety-ridden for students with differing learning profiles.

Views of the Classroom

A teacher who can establish a community of learning in which all citizens are engaged in meaningful work based on their own learning profiles and interests is a teacher who...

—sees the teacher's role as that of coach or director rather than puppeteer. Such a teacher respects the need and capacity of learners to grow in independence, while still understanding who the adult professional in the room is.

—values understanding over coverage. This teacher knows that strong minds are built through engagement with ideas rather than accumulation of facts.

—values both student likenesses and differences. A teacher with this characteristic understands that pretending we are all alike robs us of our individuality, obscuring both our talents and our troubles. Such a teacher also understands that failure to help us understand our vast commonness robs us of respect for the value of all human life.

—values both equity and excellence. This teacher understands the need to give each student access to powerful learning opportunities and to help each student exceed the horizon of success which that student envisions.

—rejects "single standard" instruction. This teacher also understands that one student's brilliance is another's mediocrity or that one student's off-the-cuff response is another's breakthrough insight.

Management Skills

A teacher who can create an invigorating learning environment for a group of students with widely diverse talents, readiness levels and interests will display considerable "facility of orchestration," and is a teacher who...

—systematically assesses student understanding and insight, knowing that a student's readiness and interest will provide important guidance in charting that student's route in learning.

—provides multiple avenues to what is learned, how students make sense of ideas, and how students demonstrate what they know.

—guides students in successfully working alone and in a wide variety of groups, based on the task, student readiness, student interest, student choice, and teacher choice.

—aids students in establishing and living by rules and practices which encourage hard work and high standards for each individual.

—assists students in setting goals,

learning to make positive decisions about reaching those goals, and in engaging in both long and short term self-evaluation.

—understands the gauzy but essential link between affect and cognition in all learners. Such a teacher studies the subtle signals a student sends regarding a sense of belonging, self-efficacy, aspirations, and fears, and knows that students will be affected variously by various events and experiences in their lives.

—establishes a learning environment in which there is a balance between whole group, small group, and individual activities, between independence and cooperation, between teacher choice and student choice, between group standards and individual standards, between the pull which comes with challenge and the exhilaration which comes with a sense of authentic accomplishment.

Much of our research indicates that relatively few veteran teachers and fewer novice teachers are exemplars of these traits. There are many reasons why that is the case. Among the reasons are teachers' persistent images (from their own schooling) of one-size-fits-all classrooms, lack of long term training and support for teacher in developing differentiated classrooms, fear of being held in low regard by administrators if classrooms are perceived as noisy or disorderly, lack of the necessary subject area expertise which is a precursor to designing meaningfully differentiated instruction, lack of managerial skills for a multi-task classroom, test-driven instruction which commends coverage, acceptance of repetition and mastery of basic skills as appropriate measures of teacher and student success, large class sizes, and lack of training in needs of academically and culturally diverse learners.

There may well be nothing more exciting in schools than regular classrooms which are differentiated to engage a variety of learners in both common and individual endeavors. Such classrooms model not only the energy and excitement of individually tailored learning, but also learning communities in which the twin American values of excellence and equity flourish side by side.

There may be nothing more foolish than mandating that such classrooms will exist without understanding that few teachers in our schools are currently ready to develop appropriately differentiated learning environments. If heterogeneous classrooms are to offer promise for meeting the academic and affective needs of academically diverse learners, including the gifted, we have scarcely begun to conceive of the scope and duration of staff development which will be required.

Carol Ann Tomlinson is assistant professor of Educational Studies at the University of Virginia in Charlottesville.

The CAG Institutes

by VICTORIA STEINITZ

As a part of helping teachers to be better prepared to meet the needs of their gifted students, the California Association for the Gifted presents professional development institutes throughout the state. The purpose of the institutes is to share information about strategies for planning curriculum to meet the special needs of gifted students. The basis for these institutes is the material presented in the California State Department of Education document *Differentiating the Core Curriculum for Advanced Learners*. A major feature of this document is the use of the terms Depth, Complexity, Novelty, and Acceleration, which are the four vital elements in a curriculum for gifted learners. Institute attendees receive a thorough grounding in how to develop curriculum based on these elements.

In the past, institutes began on Friday evening and continued through Saturday, but this year's schedule calls for more institutes to begin on Saturday and continue to noon on Sunday.

Educators leading the seesions bring expertise in technology, science, language arts and sheltered English. Led by Sandra Kaplan, presenters have included Karen Buxton, Vera Eby, Ron Fontaine, Terrie Gray, Marge Hoctor, Linda Holmes, Karen Preston, Victoria Steinitz, and Janet Ward.

Participants work with the *Differentiating the Core Curriculum* document, which gives examples of differentiated curriculum activities, questioning strategies, learning centers, and task cards.

The sites for the Institutes have included Fresno, Santa Rosa, San Francisco, Concord, Santa Barbara, Bakersfield, San Diego, Moreno Valley, and Los Angeles. This variety of locations has made it possible to reach audiences throughout the state.

Watch for future institutes to be two-tiered. Tier one will present introductory-level sessions exploring Depth, Complexity, Novelty, and Acceleration. Tier two will be more advanced presentations focusing on the four elements plus problem solving within content areas. CAG is also planning institute sessions for parents—our "at-home educators."

At press time, CAG has completed plans for a Teacher Institute at the San Rafael Holiday Inn in Marin County, October 13–14. CAG members will receive a brochure by mail giving the full schedule as soon as it is finalized.

Victoria Steinitz is the Gifted-Bilingual Magnet Coordinator at Euclid Avenue School, Los Angeles, and the Educator Representative for the Mission Region.

Gifted Students as Gifted Teachers

by KATHERINE GUSTIN, LISA HEIMLICH, and GINA LINCICUM

Gifted education has changed immensely in the past twenty years. The four cornerstones of teaching high ability and creative learners—depth, complexity, novelty, and acceleration—have not always enjoyed the equal favor among parents and educators as they do today. However, many of the same dilemmas facing gifted education still persist, such as readiness levels, pull-out programs and public education funding.

How do the experiences of identified gifted students influence their decisions as educators of the gifted? Here are the perspectives of three teachers at Euclid Avenue Gifted/High Ability Bilingual Magnet School in Los Angeles, all identified gifted students when they were children. How does their own schooling influence their decisions as educators? As students in three radically different approaches to gifted education, their teaching is at times a reflection and at times a contradiction of their own experiences in the classroom. These stories illuminate the current debates raging over how to best meet the needs of gifted learners in today's schools.

Katherine Gustin,
5th/6th Grade Teacher

My first experience with gifted education was in kindergarten. I remember being taken out of class and given a creativity test. It was based on this test that I was identified gifted and the following year I begin in the MGM (Mentally Gifted Minors) pull-out program at my school. Several times per year we left our classrooms and met with another teacher and the other MGM students at the school. During these days we had special lessons, and worked on independent study projects. These projects were completed at home and brought back to school. In second grade, I was put into a third grade class for the language arts period of the day in addition to the pull-out program.

The pull-out program was the only differentiation that took place for gifted students. In the classroom, we were given the same assignments, worksheets, and textbooks as the other students. I remember everything being done in whole group and the entire class learning the same thing at the same pace. Those of us in MGM usually finished our work before everyone else and so had quite a bit of free time. I got to read numerous books, which was great because I love to read. In the classroom, the only real difference was that the identified gifted students were teased by the other students.

When I entered junior high school, those of us in MGM were grouped together for language arts and social studies. Everyone had to take the same subjects so it was not really obvious to the other students who was in the gifted program. We just all happened to be in the same class. These classes were fairly competitive. Most of us had a great deal of parental support and were expected to do well.

The social studies class was the best experience I had in my years in MGM. We had many involved discussions in class and did a number of projects and research that went into great depth for the topics being studied. Language arts was a completely different story. The teacher's idea of differentiation in that class consisted of SRA. This turned into a contest to see who could reach the "gold" level first. All in all my first eight years of school were not terribly challenging for those of us in MGM. In fact, most of the time I was quite bored.

The high school I attended was a private Catholic school and did not have a gifted program. It was a college preparatory curriculum and was a very demanding, challenging, and well-constructed program. Although it was not a gifted program per se, it provided well for those of us that had been in gifted programs in elementary school.

I now teach in a gifted magnet, and the difference between my experiences as a gifted student and the experiences of my students is like night and day. I understand the value of providing a differentiated curriculum to meet the needs of my students and work hard to spark and maintain their interests in a variety of topics. I make sure that my lessons, learning centers, and independent study projects give students experience with depth, complexity, and novelty. My students also get a chance to have input into the planning of the curriculum so that they can learn about things in which they have a strong interest as well as the curriculum prescribed in the district course of study.

Our program is consistent, unlike my experience with the pull-out program. My students are

challenged every day. I use thematic interdisciplinary teaching and the students relate information to our theme "Influence," and relate it interdisciplinarily. This curriculum develops their critical and creative thinking skills and forms a solid foundation upon which they can continue to build.

I look at my students now and wish that I could have had this same kind of experience when I was in school. While I cannot change my experience, I can make sure that my students get the best program I can give them, and I can learn right along with them.

Lisa Heimlich,
4th/5th Grade Teacher

When my family moved to California, we settled in an upper-middle class neighborhood known for its good schools and community resources. I was identified as highly gifted on a standardized test in first grade and I entered the MGM (later that year to be called GATE) program in second grade. From that point on, I was in a gifted or high ability program until I graduated from high school. This meant that all-day, every day, from ages 6 to 17, I was in a classroom with all the "same type" of kids. Or so I thought.

Unlike most of my classmates, I did not come from an intact family. There were many serious concerns at home, namely putting food on the table for three kids, surviving on a single-parent income, and dealing with the psychological effects of my parents' marriage breaking up and my mom being diagnosed with cancer. I was not a discipline problem, but I definitely found myself in trouble more than the "typical" (if there is one) gifted child. And so given this high intellectual ability, I was always expected to "figure it out" or "survive" without much help or support from peers or teachers. I once went to talk to one of my teachers because I was afraid my mom would die from the cancer, and I can recall being told, "You're smart. You'll get through it. Now get back to work." I will never forget how I was cast aside due to my "giftedness."

This only one example of how my teachers relied on comparison with other students rather than individual, differentiated attention. Depth, complexity, and novelty were virtually non-existent throughout my schooling, and instead acceleration and competition became the hallmarks of my education. In elementary school, I can remember the library "fan clubs," where in order to be admitted to the club you had to have read five books written by the particular author. It became a game to see how many fan clubs you could get into, not whether you were actually reading the books. Instead of learning basic math facts in addition, subtraction, multiplication and division, we had a schoolwide competition based on speed and accuracy, with ribbons awarded to the place winners in each category. We also had the wonderfully color-coded SRA reading comprehension kits practically glued to the back counter of every classroom. It was a student-induced but teacher-facilitated race to see who could finish each color group of "lessons" the fastest. Your grades depended on where you were working in comparison to the rest of the class, and students who could not keep up with the pace were considered slow and incapable of doing the work in a gifted classroom. We were trained in speed reading, and were given speed tests as part of our language arts grade. We all trained for the schoolwide Olympics rather than learning sports or teamwork during P.E. class.

The only purpose all of this acceleration, comparison, and competition served was to alienate us from other students because they were considered competitors or opponents in the game, to increase the stress and pressure exerted on us by our parents and teachers, and to lower the already destroyed self-esteem that came with being in the GEEK—not the GATE—class. Even when I continued on in an entirely high ability junior/senior high school, the emphasis was on beating out the person sitting next to you for college admissions and scholarships. Everybody was running in a race in which no one ever *asked* us to participate.

Do I regret being in a gifted program throughout high school? Yes and no, because although it did help me get into a university with a scholarship, it in no way prepared me for "the real world." Cooperative learning was a foreign concept to me, unless you counted meeting at the doughnut shop before school to compare answers on the calculus homework. Novel, in-depth, and creative study on interesting topics was unheard of, unless you were contriving a story to be allowed to participate in an extracurricular activity afterschool.

Now as I complete my first year of teaching, I realize I have gone out of my way to decrease competition, increase cooperation, and share feelings and emotions in my classroom. The reason for this is because I was denied these experiences as a student, and I do not want to contribute to another generation of misunderstood and under-challenged gifted learners.

That is all the motivation I need to encourage me every day to be a better teacher for my students.

Gina Lincicum,
2nd/3rd Grade Teacher

The earliest memory I have of school is in kindergarten, sitting aside from the group, working independently on a "computer" (System 80, I think it was called). I remember a huge TV screen with big buttons. I did phonics and reading and enjoyed it immensely. I learned at my own pace and I was alone. Being alone is the main thing I remember from elementary school.

In fourth and fifth grades, when I was more aware of my abilities and hoped to encourage them, I spent a lot of time with two other girls in an empty classroom working on "projects." We built a lot of things with toothpicks that year, and we read a lot of books. I had the impression my teacher did not know what to do with me, which frustrated me. My mother knew I was different from other students, but she did not seem to know how to challenge me, either. She supported me at home by buying books and puzzles, all of which I raced through. Early on, I found that the library was a much more economical habit for someone who read as fast as I did, and the library has always been one of my favorite places.

In high school and college, I used my desire for learning to make up for the things I felt were neglected in my classes. I have always had the drive and determination to learn as much as I can, and now I recognize that as a life skill that I learned through my experiences as a child. That is one of the main things I try to foster in my students; I encourage them to be lifelong learners. I would do that with any group of students, but having been a frustrated gifted student, I realize the needs that can be fulfilled when you know what resources you have available to you.

I thought it would be an advantage to be able to relate to my students. In actuality, it has made this year much more difficult than I expected. Because I relate so easily to them, I am more critical of myself and the experiences I provide for them. I worry so much about whether they are being challenged enough, and I push myself (too hard, sometimes) to do the opposite of what my teachers did. Because my mother and teachers did not know how to challenge me, they used a common method—acceleration. I learned to love it. I enjoyed being the fastest at everything. I have tried to move away from that with my students, though both they and their parents seem very comfortable with speed and competition. It has been hard to implement other methods of differentiation, both for myself, having not been taught any other way, and for them.

Another thing that has changed fro me this year was the realization that gifted students are just as different as all exceptional students. Many of my students have learning disabilities, behavior problems, or even a physical handicap that hide the characteristics so often seen in gifted children. I feel that because I was a gifted student, I was able to see those characteristics, as subtle as they might be. Though it has taken time, I have learned a lot in the process. They have taught me as much, if not more, than I have taught them.

I am glad that my students have an environment that encourages their diversity and growth. Looking back, I wonder how participating in a GATE program would have helped me. I feel fortunate that I made it this far without that direct influence from the outside, and I am glad to be involved with gifted students, as they foster my personal growth just as I foster theirs.

Katherine Gustin, Lisa Heimlich, and Gina Lincicum are teachers at Euclid Avenue Gifted/High Ability Bilingual Magnet School, Los Angeles Unified School District.

Eun Mi Ha,
Grade 12
Crescenta High
School
Glendale, CA

TECHNET

For the COMMUNICATOR—The I*EARN Network

by TERRIE GRAY

The following information was forwarded to the WWWedu listserve last month. It describes a network and projects that are dynamic and engaging for all students, and easily defensible for gifted students.

"Last Thursday, Jane McLane and Kristi Franz shared with an audience of 'Education Reform and the Information Highway' how a deepening sequence of I*EARN activities had transformed their classrooms over the past four years. I have attended hundreds of conferences over the years, but this was the richest and most meaningful presentation I have seen in my career.

It is particularly relevant for I*EARN, because they have simultaneously solved four issues: time for teachers to do this work, infusion of the network in the daily activities of learning, integration of e-mail and conference activity, and grounding of their I*EARN work on a research base to improve student learning (particularly in writing). Below is a summary:

Four years ago, Kristi and Jane did not know each other since their schools were 300 miles apart, but both were on I*EARN.

Jane had previously organized two- way exchanges with her students and partners in Siberia, while Kristi had taught in Kenya. After visiting both in their classrooms, I knew immediately their complementary styles, interests, and skills could make them powerful partners, so I introduced them online.

The presentation explained how the variety of projects flowed from one into the next—how they prepared both students and teachers for telecommunications learning at increasingly deeper levels; how these projects were a key to teaching writing skills, language development, math skills, art, history, geography, science, multicultural understanding, problem solving, and collaborative skills; how I*EARN projects enabled them to contextualize learning for their students; and how the whole process enabled constructivist learning and a constructivist curriculum.

The sequence of projects and activities included:

1. Water Habitat Project
2. Martin Luther King Messages
3. Friendship Messages
4. The Elders Project
5. The Aids Baby Quilt Project
6. The Sense of Place Quilt
7. The Celebrations Project
8. The Global Art Project—Family Activities

1. Water Habitat

Kristi's kids in eastern Washington studied a nearby pond. They visited the site during each season, made books, talked with local officials and parks managers, and shared their findings online with Kimball. Jane's students did a similar study of a saltwater area near their school, documenting their work with photographs, drawings, text, and online communication. Both schools supplemented electronic communication with snail mail. Kristi and Jane then had the chance to visit each other's classes.

2. Martin Luther King Messages

Kimball is an ethnically diverse school, with all races and 25 first languages represented. One of the most moving activities of Jane's students is the annual 'I Have a Dream...' exercise, in which they write their dream after studying the life and work of Martin Luther King. They shared these online with Kristi's students, who then created their own. These were displayed in the entrance to an auditorium at Washington State University where Martin Luther King III gave an address.

One day they were studying the impact of Ghandi on Martin Luther King. The next day an introductory message was posted on I*EARN Notes from a school in India, so the students described their work in a class response.

3. Friendship Messages

As the partnership work continued between the two schools, the friendship between Jane and Kristi grew. It also developed with the students as they sent messages to each other. But each school had other contacts around the world found both independently and through I*EARN, so the volume and variety of these messages increased. The relationships provided critical motivation for both student and teacher. The rewards of these bonds outweighed the costs in time, energy, frustration, etc. to sustain telecommunication past the honeymoon period. The mutual reinforcement of the two teacher/friends was especially important, since the teacher bears the greatest maintenance burden.

4. Elders Project

Students collected stories from their grandparents and others about what it was like when they were seven years old. They wrote illustrated books, shared findings online, and produced a product for I*EARN distribution. One intriguing math activity: the kids had a graph of footprints that meandered around a page. They colored in seven of the left ones for their own age and 75 or so right ones to get a perspective on the years of their elder. Feedback from parents and grandparents—"Thank you so much for giving me a chance to revisit these experiences. No one else has asked."

5. Aids Baby Quilts

This was a chance to participate in an I*EARN conference project initiated by someone else and use the skills they had developed on partner projects and global e-mail. This project proved to be one of the best examples of a way to integrate understanding, human service, and first grade curriculum.

6. Sense of Place Quilt Project

Using what they had learned from the Boston, Spain and other centers, Kristi and Jane worked on another quilt project. Students from several countries created crayon transfer drawings of their locales, and these were assembled into global quilts. One of them won first place in the Palouse Empire Fair. This was true global participation in local culture, combining high technology with traditional crafts.

7. The Celebrations Project

In this project, the two classes connected with others around the world to compare various festivals of light that celebrate the renewal of self. Examples came from Zuni, Kenya, Sweden, and others.

8. The Global Art Project

The Elders Project set the stage for a sequel, The Elementary Global Art Project, in which many of you participated. The ideas and skills developed in other work led to the concept; connecting live with so many wonderful teachers in Argentina provided the links. Several of these people met again at Tel-Ed in Albuquerque to exhange the final pieces, and now they are displayed around the world.

In addition to teaching first grade, Jane has an afterschool international club. As they looked at the artwork from the Russian students, Jane suggested, 'You can write a message to the artist. Tell him or her what you like about the picture, about what is similar or different from your pictures, and then a little about yourself and where you live. Or write a message to the entire class if you would rather.'

Tami Dolph, a fourth grade student at Kimball, sent her artwork to Spain. Narcis put it on the World Wide Web. You can imagine Tami's amazement when she saw her picture appearing from Barcelona.

When the request for messages to Kobe arrived, students composed letters of support and mailed new drawings so the children there could be included in this family of artists when their lives were so disrupted.

The Writing Process

All of these projects and activities involved writing. The first-grade students compose a message, observation, journal entry, or story with 'personal spelling.' They get their ideas down on paper, or now in KidWorks 2 on the computer. Then they edit. Next they read it to others. Jane and Kristi then go over it with them and they change it into 'book spelling,' commonly agreed upon spelling so we can all under-

stand each other. Book spelling is non-judgmental, as opposed to 'correct spelling,' and achieves the same result without damage to the little egos. Kids are involved in both self-assessment and peer assessment. Art is included in most of the work to provide multi-sensory expression of the children's thoughts. Art becomes an important teaching tool in the writing process. The projects themselves then become the curriculum—the vehicle for learning both the skills and knowledge. The products become the basis for student/parent/teacher conferences and an ongoing part of the student's portfolio.

A lesson well illustrated by all these projects was the powerful interplay between personal relationships and project work—each reinforces the other. In-person sharing, exchanges, electronic mail, telephone, snail mail, and conference-based projects all together are our unique way of building a unique network."

Terrie Gray is a telementor with the California Telemation Project and she teaches middle school in Chico, CA. Contact her at TerrieG@aol.com.

My Mother's Kitchen

24 forks
31 spoons
24 knives
48 bowls and plates
36 cups
4 pots
5 pans
My mother in the kitchen,
making apple pie,
the apple cupped in her hand,
she strokes it with the peeler
like she's brushing my hair

—Heidi Strasser
Paul Ecke Elementary School, San Diego

What is I*EARN?

I*EARN (the International Education and Resource Network) empowers teachers and young people (K-12) to work together in different parts of the world at very low cost through a global telecommunications network. I*EARN is expanding to additional international sites daily and now includes over 500 schools in over 20 countries. In addition, we are negotiating with organizations in Nicaragua, Egypt, Senegal, Singapore and Haiti.

I*EARN projects generally utilize three forms of interaction:

- video-speaker telephones (low-cost, using regular telephone lines, slow-scan, black & white)
- electronic mail and on-line conferencing
- exchanges

The purpose of I*EARN is to enable elementary and secondary students to make a meaningful contribution to the health and welfare of people and the planet. We want to see students go beyond simply being "pen-pals" to use telecommunications in joint student projects designed to make a difference in the world as part of the educational process.

I*EARN is a non-profit organization. All members of I*EARN in the U.S. have full Internet capability, including telnet, gopher, etc.

You can join existing structured on-line projects or work with others internationally to create your own projects within the following subject areas:

- environment/science
- arts/literature
- social studies/economics/politics
- interdisciplinary/other

On-line support in the form of project facilitators is available for project assistance. Further, I*EARN uses extensive on-line conferencing as a means of creating "rooms" for project work. The contents of these rooms are shared automatically with the networks used by I*EARN around the world—minimizing costs and maximizing involvement by students and teachers around the world.

Not wanting to "re-invent the wheel," we look very seriously at international partnerships that exist already to see if adding telecommunications would enhance and deepen the relationship. Toward this end, we are working with international service and youth organizations to explore how telecommunications can bring larger numbers of young people into contact and meaningful work with each other using existing organizational infrastructures. Examples of such youth and service groups include, Save the Children, World Scouts Environment Network, Partners of the Americas, street children organizations in Brazil and elsewhere, the United Nations Environmental Programme (UNEP),and UNICEF.

A few examples of recent student projects include:

- *The Contemporary*, News magazine
- *A Vision*, Award-winning literary anthology
- *Planetary Notions*, Environmental newsletter
- *Liberty Bound*, Human rights newsletter
- *ICARUS*, Ozone/UV measurement and newsletter
- *The People We Admire - Las Personas que Admiramos!*, A Bilingual study of cultural heroes
- Holocaust/Genocide Project & Newsletter
- Water pollution measurement
- Rainforest Project
- Support for children in Bosnia and Somalia
- Building wells for clean water in Nicaragua
- The Family Project
- Projects in Spanish, French, Russian
- The Recovery Project - Teen Substance Abuse
- *Inside View*, A teen affairs magazine
- *Kids Can*, An elementary student newsletter

We welcome you to I*EARN and look forward to you joining the thousands of others in the network involved in educational projects that make a difference in the world.

Explore the I*EARN gopher. I*EARN student projects are described in English and Spanish: gopher.iearn.org 7008 or URL: gopher://gopher.igc.apc.org:7008/11

Please feel free to contact us for more information.

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Call for Presenters

34th Annual CAG Conference

GATE Connections: Computers, Curriculum, Community

Los Angeles, March 1–3, 1996

Application deadline: October 13, 1995

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California Association for the Gifted
426 Escuela Avenue, Suite 19
Mountain View, CA 94040

Call for Presenters

34th Annual CAG Conference

GATE Connections: Computers, Curriculum, Community

Los Angeles, March 1-3, 1996

The Board of Directors invites you to submit proposals for presentation in Los Angeles, March 1-3, 1996. The conference theme, GATE Connections: Computers, Curriculum and Community, was chosen to reflect State Superintendent Delaine Eastin's four-point agenda for California students: Parent Involvement, Early Literacy, Technology and Safe Schools. Presentations that relate to these issues are especially welcome.

- Sessions are 75 minutes in length, including questions and answer time.
- CAG will reimburse presenters up to $35 per session for supplies or copying costs.
- Presenters receive one complimentary one-year CAG membership per session.
- Expenses for travel, lodging and conference registration are the responsibility of the presenter.

Your time of presentation, room set-up and AV are assigned based on requests made on this form. Later changes are not possible. All room set-ups will be theater style unless you request otherwise. Please review the list below and ✔ the items you need for your presentation.

- ☐ Overhead projector/screen or chalk/white board. Circle your choice.
- ☐ Slide projector or VCR (appropriate for small rooms only). Circle your choice.
- ☐ No AV needed
- ☐ Classroom seating with tables for using manipulatives

Complete this form and mail **before October 13** to California Association for the Gifted, 426 Escuela, Suite 19, Mountain View, CA 94040.

Name _____ Work Phone ( ) _____

Address _____ Home Phone ( ) _____

City/State _____ Zip Code _____

School District _____ Position _____

Will you have a co-presenter? If so, please attach a page with the above information for each co-presenter.

Title of session (limit to 60 characters including spaces)

_____

Presentation description for the conference program (limit 75 words) Please use complete sentences, describing content as accurately and completely as possible. Include implications for G/T students.

Reference: List name and contact information for person who can recommend you as a presenter.

Name _____ Work Phone: ( ) _____

Position _____ Home Phone: ( ) _____

Level (choose one)

- ☐ Preschool/Kindergarten
- ☐ Primary (1–3)
- ☐ Intermediate (4–6)
- ☐ Middle School (6-9)
- ☐ High School (9–12)
- ☐ K/12

Major Target Audience (choose one)

- ☐ Teachers
- ☐ Parents
- ☐ Administrators
- ☐ Counselors
- ☐ General

CAG Student Grants

Noah Wiswell
Creekside Oaks Elementary School,
Lincoln, CA

Hello, my name is Noah Wiswell, and I am in the 4th grade. I am very proud that I was chosen to receive one of the GAC research grants. The goal of my project is to try to make a new kind of plant. I will do this by exchanging the pollen from one kind of plant with that from another kind of plant when they are old enough to have blossoms. After doing this, if these plants produce a new kind of fruit, I will then take the seeds from the fruit of these plants and plant them to see if they grow into a new kind of plant.

The types of plants that I will be using to exchange pollen for my project are cucumbers, watermelons, cantaloupes, pumpkins, squash, and honeydew melons. In early February I purchased the seeds, pots, potting soil, and other supplies to do my project. I planted some seeds of each type of plant indoors in small pots made of peat moss. After about two or three weeks the seeds I planted started to grow, and I transplanted the small plants to some large plastic pots that were outdoors on our patio. However, because the weather this year was so rainy and cold in March, the plants did not grow very well, and so I needed to replant the seeds.

I hope that now it is April, the weather will be nice enough so that I can continue to work on my project. As soon as the plants blossom, I will exchange the pollen and hope that my project will result in a new kind of plant.

James Fujita
Rose Avenue School, Oxnard, CA

Entomology, by definition, is "the study of insects." However, I believe is much more.

I picture entomology as not only the study of insects, but the responsibility to educate others about the topic. This is what my project is all about. I plan to educate students about insects so that they will lose their fear of such animals by recognizing why they are so important to the world.

In planning a presentation, I first talk to the teacher or curator to find out what he or she wants in the presentation. I am able to speak about metamorphosis, ecology, physiology, general characteristics, etc. of not only insects, but other animals such as arachnids, crustaceans, reptiles, and amphibians in coordination with the teacher's or curator's wishes. I use numerous live animals, such as tarantulas, walking sticks, scorpions, and snakes, which the participants are able to handle and observe closely. The displays of preserved specimens contain many exotic examples of arthropods from around the world, as well as examples of the local fauna. These types of visual aids help the students relate the animals to their newly-found knowledge.

I have already done over 150 of these presentations to museums and schools from grades K-12, including special education students, bilingual classes, and gifted students, as well as teacher in-service programs. Also, I have appeared on *The Tonight Show* with Jay Leno, *Disney Adventures Magazine*, and *National Geographic World*, educating people about my fascination with insects. I feel that my greatest accomplishment in my teaching, however, was when I appeared on an episode of *Teams Distance Learning* where, via satellite television, I had the opportunity to speak to over 60,000 elementary school students from around the country. By direct phone line into the studio, I was able to answer the questions of several students from as far away as Washington, DC and Baltimore, Maryland. My

mom and dad, who together have over 35 years of high school teaching experience, said they have not reached that many students, so this was quite a thrill.

This school year, I have already spoken and exhibited at a science and math teachers conference given by the Ventura county Superintendent's Office, a student and parent science night at Las Colinas School, and the Children's Activity Center after school program in Oxnard.

To further educate people on the importance of insects, I am in the process of setting up a rainforest exhibit using insects I collected last summer in Costa Rica. This exhibit will show some insects found in rainforests and how they are important to the rainforest ecosystem.

I feel that students like myself play a critical role in educating the public about the importance of preserving our environment. By taking an active role, I hope to encourage others to become interested and involved too.

Holly Greenwood
Bell Intermediate School, Garden Grove, CA

My name is Holly Greenwood. I am fourteen years old and an eighth grader. I have participated in many activities, including tap, jazz, ballet, singing, and piano lessons. I've been on softball, basketball, and soccer teams in the past. Although I enjoyed these activities, acting has been something that comes naturally to me. From the time I was little I loved to be the family comedian and make up shows to perform with my neighborhood friends.

When I was in the 4th grade I was a unicorn in my first school play. That year I also represented Garden Grove in the Miss Junior America Pageant held in Los Angeles. I have also been in school plays every year since then. I took a drama class for a semester at school last year. Of all the activities I have experienced, drama has been the most rewarding. I love to entertain people.

For years I have wanted to take professional drama classes. I very much enjoy this form of art and am interested in pursuing it. This CAG grant has given me the opportunity that I have always wanted—to study drama with professional teachers.

I am presently attending three sessions of theatre education at South Coast Repertory's Young Conservatory in Costa Mesa, California. Each session is 11 weeks long. The classes are for two hours each week. I have completed the first session entitled "Speak." Through improvisational acting, it focused on developing a stageworthy voice. I am now in the second session, "Perform." We are rehearsing for a play that we are currently writing and will perform. In the third session, "Move," students develop self-confidence in performance through exercises in free movement, dance, and mime.

Besides strengthening my acting abilities and skills, these classes are helping me to become more self-confident. I was elected Student Body President of my school this semester. I know that having taken these classes will help make speaking at my graduation this June a little easier.

Drama is a form of art that I love, and I'm so glad that I've been given this chance to pursue this field that I enjoy so much.

Marcus Maczynski
Bell Intermediate School, Garden Grove

Space camp was a lot more than I expected. At first I thought that there would be a lot of lectures, but almost everything is hands-on. We were divided into teams, and I was part of the Neptune team. My positions were Payload Specialist One for the Discovery mission and Ground Control Operator on mission Endeavor. After being briefed on camp rules and regulations, we loaded up on busses and took a field trip around Kennedy Space Center. We saw flight ready rockets, Mercury Seven, and what was left of Skylab. Then we went to a NASA movie theater where we watched "The Dream is Alive." It showed footage of the Orbiter and its repair and talked about training techniques. Then we went back to camp for dinner at the Milky Way Cafe, where we had all our meals.

On day two we got our flight suits, shorts and T-shirts. The activities for the day included the SSMT, Five Degrees of Freedom, training for our Discovery mission and the Endeavor mission, and trying astronaut food, most of which

was disgusting.

The Space Station Mobility Trainer (the SSMT) is like a human hamster wheel, except that when you run, the wheel doesn't turn, you do! It's like running up a wall. You are harnessed to a chair which is in the center of the wheel and you then run, though if you are not about 60 inches tall you either drag your feet or you can't reach the ground.

The Five Degrees of Freedom is a simulator made to demonstrate the Manned Maneuvering Unit (MMU). The MMU is used in space to work on satellites without a tether. The five different degrees are front to back, side to side, roll, pitch, and yaw. This simulator is done on a hovercraft to help create the frictionless environment of space. This is a great simulator if you don't hang upside-down too long.

On the third day we toured all of the Florida space centers. We learned about the environment necessary for a shuttle launch. Did you know that all the animals, alligators, mice, squirrels, and birds have been moved to a shelter more than three miles away due to the shock wave produced by the shuttle launch? After the tour we headed back to the simulated Discovery space ship for our mission. As Payload Specialist One I got to perform a top secret chemical reaction test just like the astronauts do in space. After our successful mission we did the next simulator called the trajectory chair. You and a partner are spinning and you have to throw a ball about three feet to the side of him. He then tries to catch the ball. Next we did the microgravity chair or 1/6 chair. The 1/6 chair simulates the gravity on the moon's surface. I weigh 84 pounds and can jump about two feet high, but in the 1/6 chair I weigh 14 pounds and can jump 12 feet high! That evening we were allowed to phone home, but with 120 kids and only one phone, you can imagine the chaos.

Day four began with a lecture about meteors. I got to hold a meteorite made of nickel and iron that weighed about 17 pounds. After the lecture we did the Multi Axis, a machine that spins you three different directions at once. You are spinning around your stomach, so you don't get sick. Also the fluid in your ears is pushed all around evenly so you don't get dizzy. This actually has not proved to be useful in astronaut training, but it is still used in jet training so that pilots know what it feels like to be in an out-of-control jet.

Next we did the zero gravity wall. In this simulation you put on a harness. The harness is attached to a cord and pulley which hooks up with some weights on the other end. This acts as a counterweight so that when you push off you keep on going in the same direction until you reach the other side. I love the feeling of weightlessness on this simulator.

Our last full day at camp started with rehearsal for graduation. After that we had to design and construct a space station and write a report about the cost of construction, building materials used, waste disposal, and the purpose of the space station. Each group had to make a presentation later that night. Our next project was to construct and launch a rocket. From there it was on to the G-force machine. It was a simulation of a jet about to crash. We were pulling five G's crashing downward, and then at the last minute Mission Control took control of the aircraft and brought it back to safety. The Endeavor mission was next. As Ground Control Officer, I was responsible for countdown, thrust activation, and landing operations. Other activities included space ball, a game like Jeopardy, blue screen animation video games, and a trip to the movies.

The week ended with graduation, which was sad. It meant the end of a very exciting week and having to say good-bye to all the new friends we made from all over the country. I would definitely recommend the space camp program and I hope I can go back next year for level two.

Marc Arribas-Layton
Polytechnic School, Pasadena, CA

I, Marc Arribas-Layton was born in Guadalajara, Spain. Soon after my family moved to Pasadena, California. My father is a math teacher and taught me simple math even before preschool. Because of this, I have grown to be fond of math. In all my math classes I earned high marks, and in fact the math classes seemed too easy for me. I wanted to challenge myself in high school, so I applied for Honors Mathematics Institute. The Honors Mathematics Institute is a program provided by Polytechnic for GATE students in the Pasadena Unified School District. The program meets four hours a week after regular school hours and provides the students with credit for mathematics so they do not have to take a regular math class in school.

The course title for 9th grade is Analytic Geometry and Functions with Transformations and is providing one of my first mathematical challenges.

The program, known as HMI, is a two year program and at the conclusion the student is prepared to enter high school calculus. This is my first year. The text for the course is *Advanced Algebra with Transformations and Applications* by Zalman Usiskin. The concepts of the course are developed through considering questions presented by the instructor and through exploratory exercises undertaken by class members in teams of two or three. The development of concepts is supported by computer demonstrations and by calculator and computer laboratory exercises. Assignments call for the use of the TI-82 graphics calculator. Students are tested after every four or five days of instruction and graded three times a year. These grades appear on their high school transcripts.

Besides being good at math, I am an all around good student. I achieved the Academic Award for receiving 3.83-4.0 average in the 6th, 7th, and 8th grades, the Mathematics Departmental Award, Foreign Language Departmental Award, Mathematics League Certificate of Merit, Mathematics Field Day certificate, and Tutoring and Assistance Network Certificate of Participation for more than 100 hours of tutoring elementary students after school at Don Benito School.

As a 14 year old 9th grade student, I have time to attend many extracurricular activities. I am a Life Scout, soon to be Eagle. I am an active member of the Church of Jesus Christ of Latter Day Saints, where I am currently secretary and 2nd counselor of the Teachers Quorum. I am also a member of my school's Chess Club, and I enjoy rollerblading and street hockey, along with just hanging out with my teen age friends.

The Ranch

As I walk along the dusty road,
I can hear the wind blowing through
the leaves and in the distance a toad

As I walk down to the lake,
I can see a duck in the distance, but is it fake?
A soft wind flows throughout the water
though it only makes the air grow hotter

As I sit down I slowly look around
I see a dragonfly zipping about
I look off the edge of the dock
and see a silvery trout

As I dangle my feet in the lake's cool water,
I lie down and dream I am watching otters
I check my watch—time to go back I realize,
and only for a moment, this I despise

—Melissa McGillivray, Grade 6
Eagle Rock Elementary School, Los Angeles

Surviving the College Process

by Cristal Brockman and Fariel Cherif

One of the most stressful and important aspects of everyone's high school career is "the college process." This subject has been the focus for many discussions during our senior year, and those discussions usually end with the cry, "This is just too much!" Not only do students worry about being accepted to college, they worry about being able to afford it. College tuition has soared over the years; consequently the need for financial assistance has soared equally. While factors such as affirmative action, private scholarships, and state grants, as well as federal aid, have made higher education a possibility for students who were previously unable to afford it, the financial aid process is long and tedious. For a lucky few, financial aid is not necessary, but for a growing number of high school seniors, the cost of an education is alarming and difficult to attain.

College tuitions vary from state to state and differ in private and public institutions. Public universities are less expensive, but there are some surprising twists to that. As a California resident, one would expect tuition for a public state university to be less expensive here than for an out-of-state school. Yet, contrary to popular belief, one does not necessarily save money by attending a school within one's own state. For example, the University of California, the University of Arizona, and the University of Texas at Austin each cost approximately $13,000 a year for California residents, including tuition, room and board, and other fees. For other out-of-state colleges, non-resident fees are only an additional $2,000-$3,000 a year. The cost of attending a public California university is no more alluring than attending a school in another state.

Private universities are typically twice as expensive as their public counterparts. They generally feature smaller student populations and lower student-teacher ratios. Unfortunately, their yearly costs range from about $22,000–$28,000, including tuition, room and board, and other fees. Both public and private universities, as is evident, are costly enough that financial aid is a paramount need.

Financial aid is based primarily on the family's need, size, and income. Most students file the FAFSA (Free Application for Federal Student Aid), but others are additionally required to submit another form called the FAF (Financial Aid Form) to some private universities. Each form is about four pages in length and takes three to four weeks to process. The FAFSA and the FAF are used to determine need and eligibility to university and federal grants, low-interest loans, and work study programs.

Although the FAF provides a section for families to explain additional financial circumstances or hardships, the FAFSA provides no such section and suggests students contact the universities to which they applied. Extra work is required of each student, and this may also be a financial

burden, something which the universities either don't realize or deem of no consequence. If the university does not understand or take into account such additional circumstances, financial aid may be denied to a student and hinder his chances for attending a certain college. Financial aid is designed to function efficiently for the average American family, but it may not serve well those families with extraordinary financial problems and situations, families which should be the main target for financial aid. The state does, however, offer California grants (Cal grants) to seniors on the basis of academic performance. These grants are available to California resident seniors who wish to further their education at a private or public university within the state. The maximum of money allocated per student is a little over $3900.

There are a multitude of private scholarships available to students on a nondiscriminating basis. They vary in eligibility requirements but cover a broad range of interests. Some are designated for specific course studies, for children of an employee at a certain company, for talent in fine arts, athletics, or other special areas. Yet with all the private scholarships available, there is still a large amount of money that is not being used. In recent years, the network of references and resources for these scholarships has increased. Numerous high schools are also implementing scholarship searches in their counselling or career centers. Since private scholarships apply to a variety of interests, they often are very specific in eligibility requirements. This, in some cases, narrows the applicant pool and the competition for a single scholarship to a handful of applicants, which increases their chances of being chosen a recipient of a particular scholarship. It does take hard work and long hours of filing applications, but it is one of the most varied and reliable forms of financial aid, with scholarships ranging from a few hundred dollars to a few thousand.

The Civil Rights Movement in the 1960s brought about fundamental changes in the educational system for disadvantaged minorities. Two of these changes include reform in the college admissions process and in scholarship availability. The federal and state governments emphasize programs which promote ethnic diversity on college campuses. The governments ideally want colleges to reflect the ethnic makeup of the community at large, and quota systems have been implemented in order to give disadvantaged minorities some additional help in the college application process.

Many people have questioned the wisdom of furnishing minorities with a separate set of standards for both college admission and scholarships, but the truth still remains that affirmative action is helping these students become better educated. We will need to make some decisions on whether to base scholarships solely on financial need or on academic performance. We will also need to address the question of whether affirmative action has served its purpose in establishing equality of opportunity for higher education or whether it is just a form of reverse discrimination.

After surviving the college saga, our advice is to decide the type of college that is best for you. A choice between public or private institution is most likely to be determined by the types of programs and courses offered and each student's personality. We wish we could say money is not an issue, but for most students it is. We suggest that students speak to their families about the financial feasibility of their goals and plan a course of action that is best for the student and his or her family. It is helpful to begin early and to be sure to get all the necessary information from the financial office of the college of your choice.

We know what it's like, good and bad, but we can say if you plan carefully and persevere, the college process won't be as traumatic as it may seem.

Cristal Brockman and Fariel Cherif are seminar students at Clairemont High School, San Diego, CA.

Sissy Tschernoscha, Grade 12
San Bernardino High School
San Bernardino, CA

CAG 1995 Teachers of the Year

Our Teachers of the Year were interviewed by student reporters.

Gail Smith
Bay Area Region

Gail Smith, a fifth grade teacher at Alamo School in Alamo, CA, has been selected as the new Bay Area Teacher of the Year by the California Association for the Gifted.

Gail has been teaching gifted students for 20 years and still loves it. "Teaching is such fun!" says Gail, "I just love my students because they brighten up my life."

When Gail first found out that she was Teacher of the Year, she couldn't believe she had won, but everyone she knows believes that no other teacher deserves this honor as much as she does.

Gail admires children who "march to a different drummer" and children who are always actively involved in the classroom activities. She believes in focusing on the fact that you need to challenge students in order to have leaders in the next generation, and she has always felt that every child is gifted in at least one way. Gail believes in strengthening each child's weaknesses.

"The best part about winning this wonderful award," says Gail, "is that I was nominated by a dear friend and former student of mine." One of Gail's former students, Melisa Kawalick, nominated her, and she was so happy when Gail won. Gail's principal, Joan Benbow, was so excited and proud of Gail that she couldn't calm herself down, and she was upset that she had not thought to nominate Gail.

Gail is a well-rounded person and a perfect teacher for gifted students. May we all congratulate her on her achievements. We hope that she knows she is a beautiful person and deserves to be Teacher of the Year.

by Heather Kawalick
Sunnybrae Middle School, Arcata

Karen Krupnick
Joshua Tree Region

Karen Krupnick, a fourth grade teacher, was selected Teacher of the Year for the Joshua Tree Region. She has been a teacher for 23 years in the Chino Unified School District. She has been in the magnet program for eleven years. Karen emphasizes creativity, critical thinking, and research in her program.

Mrs. Krupnick was appointed GATE mentor during the 1993-1994 school year and continues in that position this year. When asked, "Can you name a time when you tried to teach a student who was more challenging than others?" she responded, "Kids who are highly gifted."

It is Karen who is highly gifted. She attended the Bronx High School of Science in New York, which was an all honors high school. To get in the school you have to pass a test. Her favorite subjects were math and French.

Mrs. Krupnick says she teaches because every day is different. It is always creative and overall she enjoys it. When she was asked what this honor meant to her, she answered, "It is a really important honor. It's the best honor I've ever received."

The students in Mrs. Krupnick's class like her and learn from her, and she thinks that's because she treats all her kids with respect and makes school fun. Karen Krupnick is a wonderful teacher and is a gifted individual and educator. The students in the Chino USD are lucky to have her.

by Vanessa Salandez
Laguna Creek High School, Elk Grove

Judith Potter
Redwood Region

From as far back as she can remember, Judith Potter has always wanted to be a teacher. Now, after 31 years of teaching and seven years of teaching GATE students, Mrs. Potter has won the Teacher of the Year award for the Redwood Region.

Currently Mrs. Potter teacher the third and fourth grades at Joe Hamilton School in Crescent City, though she has taught the 2nd through 6th grades. Mrs. Potter is teaching a mixed classroom, with both GATE and non-GATE students. She decided to teach GATE students on a suggestion and found that she enjoyed it. Mrs. Potter says that she was able to focus on the needs of every student instead of all the needs of all the students, partly because of the smaller class size—the GATE classes were in small groups of eight to ten students instead of the thirty students in a normal classroom.

Though Mrs. Potter has won the Teacher of the Year award, this does not mean she is the best teacher that she can ever be. To her, this award means that she will now strive to be an even better teacher and an even better GATE teacher. "This award means a lot to me," Mrs. Potter said. "I feel very, very honored." Judith Potter is an outstanding teacher, and I think that is wonderful that she has won this year's Teacher of the Year award.

by Erin Weigand
Sutter Middle School, Sacramento

Sarah Rolfe Mission Region

Sarah Rolfe, a 5-8th grade GATE pull out teacher, was recently named Teacher of the Year for the Mission Region and honored at the annual CAG Conference in Oakland.

Mrs. Rolfe is considered a master teacher for gifted and talented students in the Manhattan Beach Unified School district and often is called on to consult and present training for teachers in other programs. As a resource teacher for gifted education for fifteen years and as the Program Coordinator for sixteen years, she has provided exceptional service to her district. She has also served as a mentor teacher in her district and has worked to extend understanding of the applications of technology throughout the curriculum.

She has developed her district's GATE program and has written curriculum for it. Now she is working on reconfiguring the middle school program and developing curriculum to meet the change of focus from a junior high school to a middle school.

Mrs. Rolfe enjoys working with middle school students, as she finds them an easy age because they are still involved in school. She states, "They still like school. They are just old enough to teach—it is a great time of growth."

It is obvious that this "gifted" teacher loves children. Her whole family is composed of teachers, and she realized that her vocation would be as a teacher when she began to babysit at the age of thirteen. Ever since then she loved working with children. "I enjoy seeing the progress of children from year to year."

She likes to have her former students come back to visit her. Her greatest joy is when a former student of hers goes into the teaching profession. Congratulations, Mrs. Rolfe!

by Stephen Lewis-Johnson
Herman Middle School, San Jose

Brian L. Rodrigues
Santa Teresa High School, San Jose

Barbara Spellman Mt. Shasta Region

Barbara Spellman of Redding was honored as Teacher of the Year for the Mt. Shasta Region at the CAG Conference held in Oakland. Mrs. Spellman currently teaches seventh grade in the Columbia School District. In her 27 years as a teacher she has taught second, sixth, seventh, eighth, and ninth grades. Mrs. Spellman said, "I used to play school with my friends." It was apparent to me that she has always loved to learn and to teach.

Overjoyed that she was receiving such an honor, Mrs. Spellman humbly stated that this award belongs to a group of people at her school, and that she merely modified the GATE program she inherited from others. This is not how the others feel, as she is known for spending personal time planning, attending inservices, working with parents, and continually striving to enhance the learning experiences of all her students. She is the coordinator of the GATE program in the Columbia School District and she is always in an advocacy role for gifted education.

Mrs. Spellman is the mother of two and the grandmother of five. Her husband, Don, said, "I haven't been able to get her to take the garbage out since she got this award." Statements like this made it clear that she has family support in her endeavors!

by Jack McDowell
Florin High School, Elk Grove

Ann Busenkell Orange Region

As I look at one of the Teacher of the Year recipients, I look closely for my first impressions. Before the interview begins, I ask politely if I may be excused for a moment. Ann smiles and replies, "Take your time." Whew!

Ann Busenkell is a terrific person and truly is the perfect person to be chosen for such a high honor. She is very amusing and can really make you feel at ease, and at the same time she still shows the teacher's side of her. During our meal/interview, she reminded me to eat my salad or finish my food, like a good, caring teacher.

Ann is extremely busy on the campus of Los Alamitos High School in Los Alamitos. She teaches advanced placement English and is the GATE coordinator. She is always ready to help both students and colleagues. One teacher said, "She is my mentor, my inspiration. She challenges me daily to do my best. I am a teacher because she inspired me to be one." Many of her former students come back and visit her after they graduate. Not every student does this for all of their teachers!

She has a family—a husband who is quite amusing (he served as comic relief during the interview), a daughter and a son. When asked about what she does in her free time, she chuckles, "What free time?" When she does manage to find some time, she likes to read, travel, and garden.

She does, however, feel a little upset when funds that were supposed to be for gifted and talented students go to administrative costs instead. "There can never be enough programs for GATE students. They help give the students an edge," she says.

At the close of the interview, she shakes my hand and says, "It was nice to meet you." Then she did something I will never forget. She gave me a candle that looks just like the world on a globe. It was lit at our table. "Here, Torreyana, you take it." To me it was like giving me a whole new look at the world.

by Torreyana Johnson
Laguna Creek High School, Elk Grove

Arleen Gruber Palomar Region

Arleen Gruber has reached a high point in her career. As a recipient of the Teacher of the Year award she feels that all her effort was well worth it because of the success of the students. "The highlight of my career, an exciting time for celebrating," she said. Mrs. Gruber feels that this award is a pat on the back for good work and an inspiration to do more.

Mrs. Gruber teaches at Serra High School in the San Diego Unified School District. At Serra she teaches a number of classes in grades 9-12. One of her classes is 9th and 10th grade Humanities. Another class she teaches is Advanced Placement English. This class enables students to get credit for college. Mrs. Gruber has been a strong advocate for GATE, and in all of her classes she teaches gifted students.

Even as a student, Mrs. Gruber wanted to become a teacher. Her earliest mentor was her father, who motivated her to get an education and gave her an appreciation for hard work. "I always wanted to do well in school and pass the desire to do well on to others." Her most gratifying experiences as a teacher are seeing children succeed. "It's pleasing to see students working hard on something, like a Shakespearean play, and being happy with the results."

Mrs. Gruber is truly a Teacher of the Year because of her leadership, hard work, and determination. She believes that more teachers should be rewarded for their contributions and dedication to students.

by Alexander Cwirko-Godycki
Abbott Middle School, San Mateo

Fran Berman Pacific Region

On March 4, 1995 I had the pleasure of meeting Fran Berman, who was chosen Teacher of the Year. Ms. Berman teaches all levels of English, including honors, advanced placement, college preparation, and standard English in the Oxnard High School District.

Ms. Berman is known within her school and by English teachers throughout the district as an outstanding teacher. At her high school, students have been scoring the highest in the district on the AP English composition and literature test. Over the past seven years 85-100% have passed, but in 1994 100% of her students passed. She has spent hundreds of hours mentoring students in writing college essays and poetry during her lunch period and after school. She has given AP seminars to prepare students.

Ms. Berman is also a published poet. In 1992-93 she received the University of California at San Diego Commendation, and she has received a fellowship to study Sophocles, Aeschylus, and Euripides at Stanford University. She is one of the very few winners of a National Endowment for the Humanities Fellowship in 1989 to study at Oxford University in England, where she studied T.S. Eliot and Thomas Hardy. "I push students past their own goal posts and they respond to great intensity with humor and spontaneity. They want to part of the great vision I want them to accomplish each year which we embark on as a family," she said. Ms. Berman deserves to be Teacher of the Year. She takes great pride in all her students and she is aware and cares about each and every one of them.

by Tom Gorrebeeck
Abbott Middle School, San Mateo

Linda Chrabas San Joaquin Region

Linda Chrabas, who teaches at La Loma Junior High School In Modesto was chosen to be San Joaquin Teacher of the Year.

Ms Chrabas is an extremely talented eighth grade Language Arts teacher. She gets the most out of her students by involving them in school newspapers, creating modern pop-up books, personality quilts, and the Young Reader Medal book activities. She has spent time with alien units where the students read science fiction and even get to make their own "aliens."

In addition to being an active department chair for Language Arts, Ms. Chrabas is involved in the GATE committee Speech team, prepares student body officers for assembly presentations, was the county presenter for CLAS in 1992, serves as the advisor for CJSF, and much more.

Ever since Linda Chrabas was a little girl, she wanted to be a teacher. She loved reading and going to the library. This honor means a lot to her. "It's like icing on the cake," she says. "They have just recognized something I enjoy doing."

Ms. Chrabas has a close relationship with her students. "They can really talk to her," says Superintendent James Enochs. "She would never lie to them."

Her students respect her because she has so much honesty. She also likes to have fun with her class and looks for the best that each child has. Self-esteem is important in her class.

Ms. Chrabas believes that this honor is just an encouragement. "Teachers carry a heavy responsibility," she says. "They have the ability to touch kids' lives." Ms. Chrabas certainly touches kids' lives. She definitely deserves to be Teacher of the Year.

by Natalie Ford
Abbott Middle School, San Mateo

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Lorraine Neilson Capitol Region

Lorraine Neilson from Davis Elementary School teaches a sixth grade self-contained GATE class. She has had seventeen years of teaching experience and still loves her work. She offers her sixth grade students a learning opportunity of a lifetime.

When she was chosen to be Teacher of the Year, Lorraine Neilson felt very special. A parent had nominated her, and she felt proud knowing that she had an effect of her students and parents. Lorraine thinks that she has had an impact on children because she tries to make learning fun and gives her students opportunities to choose activities on their own. Giving students the freedom of choice and using humor makes her students enjoy learning in her class.

As a child, Ms. Neilson knew she wanted to become a teacher. She was inspired by her favorite teachers and wanted to be like them. Now that she's a teacher and enjoys her work, she likes watching kids work together. "I like to see that spark," she explains. She is dedicated to her students. "I have a commitment to students and am able to change and adapt," she says with pure confidence.

She has the type of curriculum that focuses on history to teach kids in a entertaining way. This type of curriculum is called TIME. It talks about myths, religion, navigation, government, art, architecture, early humans, games, and drama. These topics are investigated in a period of time called Prime Time.

She has been a GATE mentor since 1991 and has served on a multicultural committee, as a Global Ed site liaison, and as a Gender/Ethnic Equity Student Achievement facilitator. Lorraine Neilson has shown excellence on many fronts. For these reasons she has earned her position as Teacher of the Year. Her students are very lucky to have her as *their* teacher of the year!

by Sara K. Kennedy
Borel Middle School, San Mateo

Rosaleen Zisch Santa Lucia Region

On March 3, at the CAG conference, all eleven Teachers of the Year were honored. I was one of the kids who got to interview a teacher of the year. Her name is Mrs. Rosaleen Zisch from Herbert Hoover Middle School in San Jose. When she was asked how this honor would affect her future, Mrs. Zisch answered, "Higher pay, I WISH!" I knew already that she had a cheerful and hopeful personality!

Mrs. Zisch has taught GATE students since returning to full-time teaching ten years ago. In her Accelerated Social Studies and Leadership classes and as Activities and Student Council Advisor, her work aims to stimulate creative thinking and problem solving. Her required Community Service Project is in its eighth year. A philosophy that includes "treating all students as gifted" produces amazing results. Her concern for our at risk children stems from personal experience. "We cannot afford to lose our GATE students as they move into their teens. They must remain stimulated and engaged in their own learning and provide leadership to others." Due to these beliefs she has organized special events using former students to teach and facilitate workshops. She has been Hoover's Teacher of the Year twice.

"To teach bright gifted students, a teacher must be constantly learning herself." Attending conferences and keeping up to date on the current educational trends has direct benefit to the classroom. Mrs. Zisch has been a fellow at two California History-Social Studies Projects, a fellow at the Monticello-Stratford Hall Summer Institute, and a recipient of the National Geography Society's summer institute awards.

Rosaleen is an advocate for quality education where the learning styles of children can be addressed with success. "GATE education has always been a fore-runner of teaching styles and methods that meet the need of each unique child."

She has published one 6-week curriculum for the Presbyterian Church, USA entitled "Growing Through Challenges" and two curriculum units for her district as a mentor teacher.

Rosaleen's credits include: Charter SAGE advisor for three years for Santa Lucia region, San Jose CAG Conference Committee for 1993, Foothill Conference Committee 1992, workshop presenter for CAG, Northern California Geography Alliance, California Social Studies Council, and presently president of the Santa Clara County Council of Social Studies and Hoover's representative on the District Restructuring Committee. She has also worked four years as an advisor at the California Association of Leadership Directors Summer Leadership Camp. She also served on the District GATE Committee, was keynote speaker for the Committee, has coordinated GATE budget for her school and planned special activities for all GATE identified students, PAC activities and some lobbying.

On a personal note, her own two children, Rebecca, 22, and Alex, 24, were in the GATE program. I'm sure they learned a lot from their mom!

I enjoyed this interview experience and hope that one day, if I become a teacher, I'll be elected Teacher of the Year too!

by Emi Nishiyama
Bowditch Middle School, San Mateo

Science Fiction Poem

The end of the world—
Terminated with a sound just below an uttered whisper,
The poundings of the last heartbeat come to a standstill
We will miss you, Earth.
Although you shouldn't have come,
We never wanted you to go

—Marjorie Light, Grade 6
Eagle Rock Elementary School, Los Angeles

Throw Out the Three R's for Gifted Students—Repetition, Review, and Regression, That Is

by CATHY AIWAZIAN and CYNTHIA WORTH

As parents of gifted children, we see very early on that they demonstrate intellectual capacities which are very different from their age peers. In attempting to foster and nourish the intellectual cravings of these inquisitive, determined learners, we draw upon whatever resources are available to us, while eagerly awaiting the day when we can entrust them to the care of professional educators whose dedication and training we have no reason to doubt. Surely in school, in the more formalized learning environment, teachers will know how to recognize and channel the children's advanced abilities in reading, math, and the arts using already mastered skills as the springboard to continued progress.

But more often than not, what happens in the school setting leaves parents with misgivings. Our initial confidence in the system is eroded when we watch as the children repeat material and skills already mastered year after year. Often our doubts are assuaged by assurances that repetition is a positive thing, that children need months of review to solidify concepts.

The educational philosophy remains the same as the children move from grade to grade. Our doubts grow more intense with each passing year. Still we are told to wait, to review. Our children may appear to be mastering high level reading materials and advanced math functions with ease, but they may not have the proper foundation for what they are doing. Wait and see is the advice we hear every year. These kids will be fine.

But gradually it dawns on us that our kids aren't fine. They often don't want to go to school, and they feel isolated, misunderstood, different. We see their self esteem and their tolerance for boredom plummet. The system has no place reserved for the gifted learner.

If fact, all too often, the mere term "gifted" brings out latent hostility that can manifest itself in all sorts of subtle ways in the classroom—none of which do the gifted child any good. It's a pity we have to call these children "gifted," thus unleashing feelings of fear, jealousy, and ambivalence on the part of so many around them. Far better to give them an impairment, not a gift. No one envies an impaired child. But somehow it's unfair for a child to be gifted—as if it's the child's fault. It would be far better to call them "asynchronous cognitive/development-impaired," which much more aptly describes their predicament, rather than "gifted."

In all fairness, we must point out that negative attitudes toward gifted children have a background in the evolution of the education system during the last 30 years. In the old Sputnik days when we thought the Russians might get the edge on us in the technology race, we gave some thought to developing our brightest students. But in the post cold war era, the trend has been to democratize—or ironically, to socialize—education so that all children receive exactly the same cookie cutter services, at least in theory. Since everyone is considered the same, no one is entitled to be different or to progress past an average level. Coupled with the well-documented practice of dumbing down curriculum to accommodate the average, this philosophy has been disastrous for our students in the global arena. Thankfully, this programmatic neglect of gifted and advanced learners has recently come under scrutiny and outright attack from a wide variety of sources ranging from the State Department of Education to meta-analyses of research, to teachers and parents.

Even in the heyday of anti-intellectualism when gifted education wasn't anyone's priority, there were individual teachers who made special provisions for the extraordinary abilities of gifted children. Now that we are in the final years of the century, teachers who develop competencies in gifted education still have to do it on their own, almost in secrecy, and mainly for love, without money or recognition. Although the word "gifted" has to be whispered when used in reference to our children, the label too offensive to be spoken aloud, these teachers spend their own time and money developing programs and units of study aimed at satisfying the gifted child's hunger for knowledge and in-depth understanding.

How lucky we parents feel when our children get a teacher who is excited about the challenge

of teaching them. When we see these teachers demonstrate their awareness of giftedness in the first few minutes of a conversation, we are ecstatic. At last, a safe haven for gifted children! Our relief and gratitude are indescribable.

These teachers know how to create an atmosphere where it is safe for gifted children to be themselves and to express their giftedness without fear of all the forms of rejection which lurk in other classrooms. Secure in their chosen expertise and flexible in their array of strategies, they have uncanny abilities to motivate and encourage gifted children in a variety of ways. Most of all, these teachers are knowledgeable about giftedness and recognize and encourage its many forms. The teacher's manual and the lesson plan are set aside, because they know how to match expectations to the gifted child's true abilities as the need arises. These teachers are willing to throw out the three R's so prevalent elsewhere in the system (Repetition, Review, and Regression) and tailor their lesson plans to the special needs of their gifted students.

Cathy Aiwazian and Cynthia Worth are founding members of MPAGE—Moorpark Parents and Advocates for Gifted Education.

Twelve Red Flags

1. **"All children are gifted."** (No one really is, therefore no special attention need be provided for your child.)
2. **"I don't believe** in labeling children." (It's okay for virtually any other special needs group, though, and especially okay for athletes. Imagine the outcry if we did away with all-star teams.)
3. **"I don't believe** in gifted." (Are we talking religion here?)
4. **"The more** advanced students can tutor the slower ones." (Why is this their job?)
5. **"More** advanced students get to answer the extra questions at the end of the chapter." (What kind of incentive is this?)
6. **"I use the** bright kids to spark my discussion groups." (Does a spark ever burn out? Who sparks the sparks?)
7. **"What** gifted kids really need is socialization." (Don't expect any academic challenges in this classroom.)
8. **"If we** don't work on socializing gifted kids, they'll grow up to be nerds." (Stellar advice. Of course everyone knows that if left to their own devices, gifted kids would all end up wearing pocket protectors and glasses.)
9. **"We** don't want gifted kids to be elitist." (We have to work on making gifted kids "more like everyone else.")
10. **"Well, your child** shouldn't have read that book (or learned that math skill) last year. That's my curriculum." (Real trouble here. Your child will have to start on page one like everyone else.)
11. **"Oh no, we** can't teach them that this year. What would we do with them next year?" (Major holding pattern in this classroom.)
12. **"Don't** worry, these kids will be fine." (Translation: What are you complaining about. Your kid is above grade level.)

—Cathy Aiwazian and Cynthia Worth

Lonely

I am lonely everyday,
There is nothing I could say
Every time I go to school
Everybody thinks I'm a fool

I try to make friends but they go away,
No one to speak with, no one to play
There is no place for me in their world,
I just sit back and feel too cold

Maybe somewhere, maybe some place,
I shall see a beautiful face
But for now I stay the same,
This lonely thing isn't a game

I really feel I want to cry,
And I don't want to lie
I don't want to drop a tear,
This is something to fear

One day I'll see the darkness fall,
Like a very dark black ball
And then I will be lonely again,
Lonely, lonely, lonely like a den

—Harut Ovsepyan, Grade 5
Eagle Rock Elementary School
Los Angeles
Harut is a bilingual student

Vasos

Vasos de cristal
vasos con dibujos
como con Miki
vasos para servir mi
jugo, leche, o soda
vasos con retratos de
jugadores de basquetbol
el vaso me sirve para
muchas cosas
el vaso de cristal
con leche blanca
y fresca y sabor
muy sabrosa

—Sandra Mendez
Capri Elementary School
San Diego

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Conejo Valley Parents Speak Out

by MARIE ELIZABETH GLUCK
(with the assistance, input, and insight of the parents of the GATE/DAC council, Conejo Valley Unified School District.)

No teacher would dream of teaching visually handicapped or hearing impaired students without the specialized training which would give her the skills to help these children fulfill their potential. In the same way, gifted students, who are as different from the norm in one direction as are special education students in another, also need appropriate training. Some concerned parents are speaking out to support the importance of ensuring that teachers of the gifted get the specialized training they need to help their students fulfill their potential.

Ask a specific group of people a question and you will get an answer that reflects their mutual concerns and viewpoints. In this instance, the people being asked are parents (more specifically, GATE parents who are representatives to a school district council) and the question is, "Would you like to see a greater emphasis placed on specialized training for teachers of gifted students?" In this instance, the answer is a resounding "Yes!" and here are the reasons.

1. All students are special. However, gifted students require a different approach. Their minds need more stimulation, and their intellects beg to be challenged. Does general teacher training have the opportunity to spend enough time on the challenges of teaching the gifted? We think not. Teachers of other educational specialties have extensive training dealing with the specific needs of their students, and the teachers of our future scientists, poets, doctors, historians, writers, and mathematicians should also have training for their special students.

2. As parents, we often hear the expression "peer pressure." What are the pressures facing GATE kids? Are they the same as those of average kids? Probably not. These kids already feel different, and as parents we know that this can cause considerable pressures for them. "If I'm so smart, why do I occasionally get things wrong?" Are my parents disappointed in me?" "Why do the other kids call me a brain and only want me for a friend when a learning group is formed?" Many teachers are happy and satisfied with their GATE kids since they generally have good grades and usually are not behavior problems. However, teachers who have been trained to teach gifted children are attuned to their needs and worries and are able to give them the emotional support that allows them to express their individuality and to be proud of themselves and their accomplishments.

3. Are you sometimes surprised to find out which children are classified as GATE? Do these students always get 100% on tests, and do they always have the correct answer in class? Not always. Are their hands always raised, or do they sometimes just sit there quietly taking it all in? Whether a student should be tested for the GATE program is an enormously difficult judgement for a teacher to make, and the right professional training would make those judgements easier and reduce the risk of bypassing the quiet types or the creative thinkers.

Teachers should have the tools to learn how to locate the gifted child. There needs to be a greater awareness of the characteristics of a gifted

Amara Telgenmeir, Grade 7
Aptos Middle School
San Francisco, CA

student, an awareness that should be relatively uniform from school site to school site. The right training would most assuredly make the identification process better.

4. Teachers and students are not the only ones who would benefit from GATE teacher training. As teachers learn the trials and techniques of teaching the gifted, this new-found information would allow them to sharpen their skills and share their insights with other staff members, including the principal. Principals, while appreciating the good test scores of GATE students, sometimes do not consider their special needs when allocating resources during curriculum planning for the school year. Trained teachers with a strong interest in the education of GATE children would be able to help principals and staff members become more aware of the needs of these students.

5. Teachers who are well trained in the needs of GATE students might help others teachers explore a variety of options for classroom management strategies which would benefit all students. For example, what is the best method for clustering students, and how and when should a cluster group of GATE students be integrated into the regular classroom in ways that will enrich the educational experience of all the students? What happens when the teacher puts a GATE student in charge of a small group? Does the teacher ensure that this benefits both the GATE student and the other students? Are teachers meeting GATE needs in all curriculum areas and not just concentrating on a special subject area such as science or math?

These are some of the considerations that cause the parents of this council to feel that GATE students need to be taught by teachers who have been trained to meet GATE needs. We would like to be able to know that GATE students will not be randomly placed in class but will be assigned to those teachers who are best prepared to teach them.

This article is the distillation of many of the ideas expressed by parent representatives at GATE/DAC meetings in the Conejo Valley Unified School District in the 1994-95 school year. As parents of gifted children, we know it requires extra effort to go beyond the classroom curriculum and stimulate the interests of these students. We feel that specific professional development in this area is vital to give the teachers who work with our GATE students the tools they need to challenge these eager learners to scale the heights and reach for the stars.

All I Need to Know I Learned From My Cat

1. If life gives you lemons, take a nap.
2. It's fun to lie in a sunbeam.
3. Always stay up for a midnight snack.
4. Bother someone and eventually you'll get what you want.
5. It's O.K. to do dumb things sometimes.
6. Scare off your enemies.
7. If you purr loud enough, you might get a hug.
8. When you're down, just remember that someone cares.
9. Don't live one life—live nine!

—Sara Embrey and Jenn Geisert
La Veta School, Orange

All I Need to Know I Learned from Baseball

1. Three strikes and you're out!
2. You've got to run to tag home.
3. Take your chances—if you feel lucky.
4. Practice makes perfect.
5. Feel proud. Winning isn't everything.
6. Don't step up to bat if you've got to go.
7. When you're thrown a curve ball, swing your hardest.
8. Don't steal, you might get caught.

—Nathan French and Kamyar Amin-Davani
La Veta School, Orange

Continued from page 1

provide experiences that challenge our most able learners in the regular classroom, the teaching of young people who show the potential for remarkably high levels of accomplishment is unquestionably a function of advanced resources and personnel who have the specialized skills for high levels of achievement and creative productivity. Another leader in the field of gifted education, Dr. James Gallagher, uses a medical analogy to emphasize the difference between the training received by the teacher for the general classroom and the specialist in the classroom for the gifted learner. He asks us to think of the general practitioner in medicine and ask ourselves if that person should know something about surgery. Acknowledging that such practitioners certainly should have such knowledge leads us to the next question, "Should that general practitioner be doing complex heart by-pass surgery?" We would, of course, deny that notion. This does not in any way reflect on the quality or competence of the general practitioner, nor on his or her merit as a professional. It is simply an acknowledgement of the need for special knowledge and strategies in more complex and advanced situations. Analogously, there is no need to question the quality of the general educator and the service he or she provides when referring to the need of specialized education and the additional competencies necessary for the teacher of the gifted.

Quality instruction of individual students is most apt to occur when teachers are aware of and able to respond to the particular characteristics of the students they instruct. Teachers of students who are gifted should manifest both the qualities that are recognized to promote good teaching and learning, and additional competencies which address the unique needs and characteristics of these special needs learners. Among these are:

- a knowledge and understanding of the origins and nature of high levels of intelligence and how such high levels can be nurtured and challenged
- a knowledge and understanding of the cognitive, social, emotional, and intuitive characteristics and needs found in gifted learners as a result of the development of high levels of intelligence
- the ability and willingness to create an environment in which gifted learners can use their strengths, risk new areas of thought and action, interrelate with their intellectual peers, and feel challenged to continue their personal and interpersonal development
- the ability and willingness to develop a flexible, individualized, differentiated curriculum appropriate to meet the needs of gifted learners
- a knowledge of and access to advanced content and ideas and varied strategies for communicating them to gifted learners with diverse interests, experiences, and values
- the ability to encourage in gifted learners a sense of social awareness and commitment to humanity and to their environment, and a respect for the worth and dignity of others
- the ability to provide consultation, collaboration, and professional services in gifted education for teachers, administrators, and parents and to provide advocacy for the gifted learner

These additional and specialized competencies beyond those needed in general education can be gained in many ways—from district-sponsored workshops and conferences to intensive involvement in a university teacher education program leading to a credential or a graduate degree. Indeed, at least 140 colleges and universities in more than 40 states currently offer some type of program to teachers wishing to specialize in teaching gifted learners. Over 100 such programs result in master's or doctoral degrees in gifted education. Untold numbers of districts provide inservice workshops to inform their teachers of the needs of gifted learners and how they might best meet those needs. The discontinuity of such workshops has created a current trend to provide internships on school sites or partnerships between school districts and universities to create more in-depth, continuous, current, and available teacher education for this specialization. The usual occasional teacher workshop on the needs of the gifted is no longer seen as sufficient to give teachers the competencies needed to appropriately serve this population of learners.

The National Association of Gifted Children recently released a position paper on "Competencies Needed by Teachers of Gifted and Talented Students" in which they state, "Gifted and talented students present a particular challenge and often experience inadequate and inappropriate education." It is hoped that by listing

competencies needed by teachers to appropriately serve gifted learners, more educators will seek out opportunities to build such advanced abilities. In addition to the competency paper, the NAGC has standards for graduate programs in gifted education under study. This standards paper is the work of an NAGC Task Force on Professional Development and reflects the importance that those who worked on the document from throughout the nation placed on the need for specialized education for teachers of gifted learners.

In California, until recently, far less support has been given to teacher preparation in gifted education. The state continues to be one of only 12 states that does not mandate appropriate educational services to gifted students and does not require any specialized educational background or experience to teach such students. At one time, about 15 years ago, California had a permissive credential that could be given to those who wished to prepare in this field and had nine universities with approved programs for granting the credential. However, the lack of mandate and priority given to gifted education at the state level resulted in the deletion of the Specialization Credential in Gifted Education a few years ago by the Commission on Teacher Credentialing and the closing of most university classes in gifted education throughout the state. Very few advanced degree programs in gifted education and only some occasional classes at the university level now exist in California. The program leading to the Master's Degree in Gifted Education offered through the Division of Special Education at California State University, Los Angeles has been in existence the longest, having offered specialized preparation for over 30 years. No doctoral level programs focused specifically on gifted education presently exist in California. It is hoped that with the revitalization of the Office of Gifted and Talented at the state level by Cathy Barkett and the cooperative leadership between the California Department of Education and the California Association for the Gifted, new mandates for appropriate service, standards for such service, and opportunities to build needed competencies will become a part of the future of teachers wishing to better serve the gifted learner.

Because of the importance of the professionally prepared teacher to the education of gifted learners, the California Association for the Gifted has initiated Teacher Institutes throughout the state, making preparation in differentiation of curriculum available to teachers who wish to better serve their gifted students. While this two-day experience is only a minimal part of the competencies needed by the teacher of the gifted learner, it is a critically important part. To supplement this program, CAG is also making a mentorship program available to those wishing further study and a demonstration school program available for those whose faculties wish to improve their service to gifted learners under the guidance of teachers and administrators who serve as advisors to their progress. CAG also continues to provide one of the premier state conferences annually to keep educators at school and at home apprised of the current developments in the field of gifted education. In addition, the Association continues to add to its list of publications which inform parents, administrators, and teachers on various issues in the field. These publications may be ordered from the CAG office.

The teacher is the most significant influence on the learning environment at school. Educators and parents alike must acknowledge and support good teaching and good teachers wherever they are found. It is also important to acknowledge that teachers who serve gifted learners need advanced competencies and skills in addition to those of the general educator. Such specialization must not only be made available but required if gifted students are to achieve their potentially high levels of ability. A strong gifted program in a school has always been an indicator of quality programs for all of the students. The teacher is central and essential to the very existence of such programs.

Dr. Barbara Clark is Professor of Special Education at California State University, Los Angeles.

All I Need to Know I learned from Video Games

1. For every quarter you spend, you get another three lives.
2. You can never have too many video games or too much money.
3. Always attack weak spots.
4. Pushing harder gets you farther.
5. The more bits the game has, the harder it is.
6. Crank up the volume and never brag, you'll probably lose.
7. The machine will never take pennies for quarters.
8. Pay attention or you'll lose.
9. Don't play in the rain. (zap!)

—Andrew Kim and Aaron Sussman
La Veta School, Orange

Continued from page 1

should be on the individual teacher rather than the group of educators.

While expediency, efficiency and cost effectiveness often dictate inservice offerings, there is sufficient evidence to indicate the ineffectiveness of large group inservices as the norm for professional development. Such inservice opportunities allow the needs of individual teachers to go unrecognized and the accountability of individuals who attend these experiences to go unexamined.

Assumption Two:

There should be a parallel relationship between experiences and expectancies teachers hold for gifted students and those held for teachers of the gifted attending professional development experiences.

Increasingly there is a double standard noted between the demands teachers of the gifted place on their students and those they demand of themselves. It seems ironic that teachers of the gifted will sometimes complain about the lack of effort expended by their gifted students when confronted by a challenging curriculum, it is then interesting to observe the discomfort and listen to the complaints of teachers when they are confronted with a challenge during a professional development experience.

The expectation to expend effort toward attainment of new goals has to be equally valued by those who teach the gifted as well as those who are gifted students. Similarly, behaviors that define poor patterns of learning by students such as passing notes and talking during a lesson cannot be accepted when practiced by educators during staff development experiences. The scholarliness anticipated by students must generalize to the adults who assume the role of students during professional development sessions.

Assumption Three:

The dimensions of depth, complexity and novelty that define differentiation of curricula for gifted students should be present in the curricula for teachers of the gifted who are engaged in professional development experiences.

A legitimate concern of teachers attending professional development experiences is the one size fits all curriculum presented to them. Opportunities to become expert in an area often are forsaken in the frequently scheduled awareness-level-only session.

Successful Professional Development Participation					
1	2	3	4	5	6
					Personalizes for own classroom situation the information shared during the professional development experience.
					Defines problem solving strategies to accommodate the what ifs while implementing the ideas shared during the professional development experience.
					Participates actively during the staff development experience by asking questions seeking further knowledge, etc.
					Correlates new ideas from the inservice with existing practices and ideas without extinguishing practices that currently work and are supported.
					Comprehends the value of new ideas for students and professional growth without perceiving these new learnings as a threat to current teacher status.

Teachers who aspire to more complex understandings and skills go wanting. A range of sophistication levels related to an area of inservice must be provided to educators who have differing needs, interests and abilities.

Assumption Four:

Indicators to determine the participant's success during the professional development experience should be defined and used consistently.

The participant's evaluation of the professional development experience often exonerates him or her from any form of self-assessment. Responding to questions regarding the quality of the inservice appears to place the primary responsibility for participant's learning and success on the presenter, room environment or snacks. While these do represent factors that contribute to participant's learning, the major teachers' determinant for the assimilation of knowledge and mastery of skills is the participant. The most important question to be asked the teacher in a training situation is: How do you perceive yourself as a learner in this context?

To facilitate this type of inquiry, a professional development participant's rubric could be constructed. This rubric would identify the descriptors of successful staff development participants and would be used by participants both to define behaviors that lead to success and to assess their role in the professional development process.

The figure on page 34 defines some examples of what a 6 or the most outstanding behaviors of participants might include.

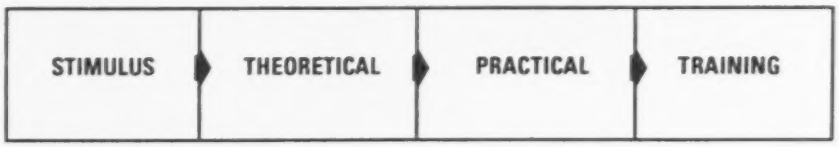
Assumption Five:

Professional development experiences include an individualized support service or user network.

Sustained change in teaching practices demand continued support. Whether this support is facilitated by a technological or people network, participants need to have a helpline available to them. The primary function of support services is to provide assistance and render encouragement. The come-and-go philosophy that assumes a teacher can come to the inservice for ideas and skills and then go back to the classroom and independently implement this newly acquired information is incorrect. The isolation of implementation concept has hindered rather than helped foster successful outcomes from professional development experiences.

Differentiated Professional Development Plan

The differentiated plan for professional development is founded on the need to attend to differences that distinguish readiness, interest, professionalism and expertise among teachers. The model includes four basic dimensions or types of professional development experiences to accommodate teacher differences.



Stimulus. Refers to the type of inservice extended to arouse interest, provide an overview and focus on simple how-to's or the practical application of ideas.

This is the most common type of staff development and typically creates excitement for the ideas presented during the inservice session without necessarily developing proficiency in their implementation.

Theoretical. Refers to the type of inservice intended to provide participants with background knowledge sufficient to make them conversant with the ideas transmitted during the inservice. Teachers who attend this type of inservice are given the theory or "why" to support the "how-to." Printed materials and research provide a thorough understanding of ideas presented during staff development experiences.

Practical. Refers to the type of inservice intended to develop the expertise of the teacher as a practicing professional. Emphasis is placed on the translation of theory into practice. Teachers who attend this level of professional development are identified as demonstration teachers. Their classrooms become the site for observation and visitation by others interested in exemplary practice. These classrooms become on-site in-classroom venues for conducting professional development sessions.

Training. Refers to the type of inservice intended to develop teacher leaders or those interested in assuming a teacher trainer role. Teachers who attend this type of inservice must have fulfilled prerequisites by participating in the stimulus, theoretical and/or practical sessions.

This range of professional development options allows teachers to individualize their learning for professional growth. While some teachers could travel through all of the inservice options, other teachers will select a single point of entry to match their self-assessment and professional aspirations.

Most importantly, teachers could develop individualized professional growth plans based on combinations of inservice options. For example, a teacher could focus on the theoretical training session and then move to the training option. Specific entry and exit competencies could be defined to aid in the selection of and movement through inservice options.

Issues of cost, time, and staffing emerge in response to this model of differentiated professional development. However, an important question needs to be asked: Does the cost of general large group single session inservice provide the outcomes that an individualized inservice design could yield? The answer to this question might well support the differentiated model for professional development!

Dr. Sandra Kaplan is Past-President of CAG and Clinical Professor, School of Education, University of Southern California.

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COMMUNICATOR

CALIFORNIA ASSOCIATION FOR THE GIFTED

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ISSUE HIGHLIGHT

CURRICULUM COMPACTING

Curriculum Compacting: Modifying the Curriculum for Above-Average Ability Students
An easy-to- implement instructional technique for modifying the curriculum of above-average students along with replacement strategies that lead to a more challenging and productive use of the student's time.

Gifted Students at Local Colleges
Local colleges offer high school and college credit at the same time.

Implementing Curriculum Compacting
Tips for successfully implementing curriculum compacting techniques.

Mathematics Compacting
How to compact math including a sample unit.

Curriculum Compacting: Intervention for Gifted Underachievers
Two case studies illustrate how curriculum compacting can be effective in motivating gifted underachievers.

Vision of the Ideal Curriculum
Practical recommendations for modifying and differentiating curriculum for students with above-average abilities.

Successful Curriculum Compacting: A Case Study
A review of a fifth grade teacher's use of curriculum compacting in a heterogeneous classroom.

CURRICULUM COMPACTING:

A SYSTEMATIC PROCEDURE FOR MODIFYING THE CURRICULUM FOR ABOVE-AVERAGE ABILITY STUDENTS

BY SALLY M. REIS

The policy statements of almost every school district in the nation reflect a commitment to meeting students' individual needs, and yet, many districts lack the capacity to put these policies into practice. An almost unlimited amount of remedial curricular material has helped teachers make necessary adjustments for lower achieving students; however, we have lacked an orderly method to make comparable adjustments for students who are already achieving at well above average levels.

This article describes an easy-to-implement instructional technique for modifying the curriculum for above average ability students: curriculum compacting. This technique can also be used for any student who displays strengths or high levels of interest in one or more content areas. The procedure has proven its effectiveness in a carefully controlled national research study as well as through several years of classroom use in a variety of educational settings across the nation.

WHAT IS CURRICULUM COMPACTING?

Curriculum compacting (Renzulli & Smith, 1978) is an instructional technique that is specifically designed to make appropriate curricular adjustments for students in any curricular area and at any grade level. Curriculum compacting has been developed and field-tested over the last fifteen years as part of a total educational program for gifted and talented students (Reis, Burns & Renzulli, 1993). It can be used, however, as part of any educational program for more capable students and has been mentioned by several other developers of programming models as a method for modifying curriculum for high ability students (Betts, 1986; Clifford, Runions, & Smith, 1986; Feldhusen & Kolloff, 1986; Treffinger, 1986).

Tannenbaum has advocated a similar process called telescoping in which students "...complete the basics in the least amount of time, thereby sparing themselves the tedium of dwelling on content that they either know already or can absorb in short order" (1986, p. 409). The procedure involves (1) defining the goals and outcomes of a particular unit or segment of instruction, (2) determining and documenting which stu-

See COMPACTING, 27

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FROM THE PRESIDENT

MARTHA FLOURNOY

Welcome to the new *Communicator* as it evolves over the next few issues. Everyone's favorite magazine on giftedness is marking its 25th year of publication with a lively new format.

In the past, our editorial goal was to address pertinent and timely issues related to giftedness from a variety of viewpoints. And that's what we will continue to do. You'll still find articles on curriculum, giving hands-on practical ideas to use in your classroom. And you'll still find the TechNet column to keep you up-to-date on the use of technology in the home and classroom.

But look what we've added. Now you'll find a section just for parents, and another one just for kids. You'll find a book review section, too, and we've lined up more than a dozen book reviewers to contribute to that column.

We've also added a Letters to the Editor column, so please let us hear from you. You're welcome to respond to one of our articles, or raise an issue for the rest of us to ponder. If there's a topic you're interested in reading about in future issues, tell us what it is.

The *Communicator* is always looking for CAG members and subscribers to join its pool of contributing writers. So if you have research that deserves a wider audience, please submit your article to the *Communicator* for consideration.

CAG looks forward to serving you through the *Communicator* for another 25 years!

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CALENDAR

SEPTEMBER 8–10, 1995
CAG Board Meeting, Westin Hotel, Santa Clara

OCTOBER 27–29, 1995
CAG Board Meeting, LAX Hilton and Towers, Los Angeles

NOVEMBER 8–12, 1995
Tampa, FL - 42nd Annual Conference, National Association for Gifted Children.

SEPT. 15–16, 1995
Sacramento - Teacher Institute at Hyatt Regency

SEPT 23–24, 1995
Fresno - Teacher Institute at Holiday Inn

SEPT. 30–OCT 1, 1995
Long Beach - Teacher Institute at Queen Mary

OCT. 14–15, 1995
Marin County - Teacher Institute at Embassy Suites and Marin County Civic Center, San Rafael
Note: Change of Location

OCT. 21–22, 1995
Santa Barbara - Teacher Institute at Radisson Hotel

NOV. 4–5, 1995
Los Angeles - Teacher Institute at Bonaventure Hotel

JANUARY 5–7, 1996
CAG Board Meeting and Outreach, Tuscan Inn, Fisherman's Wharf, San Francisco

MARCH 1–3, 1996
Los Angeles - 34th Annual CAG Conference, "GATE Connections: Computers, Curriculum and Community." LAX Hilton and Towers.

APRIL 12–14, 1996
CAG Board Meeting, Hyatt Regency, Sacramento

MARK YOUR CALENDARS

March 1-3, 1996

34th Annual CAG Conference

Los Angeles

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EFFECTIVE STUDYING AT HOME

GETTING ORGANIZED

BY VERA EBY

Twelve-year-old Michael has been home for an hour. He's had a snack, gone to the bathroom, wrestled with the dog, answered the phone, and reviewed the contents of the refrigerator again in hopes that a new and more exciting snack has appeared there. In between these activities, he's been "studying." Now he turns on the television and prepares to "relax." Mom comes in and turns off the television, telling him to finish his homework. Michael protests, stating that he is tired; he has been at school all day and he has already been studying for an hour. Michael and his mother argue about his homework.

Does this scenario sound familiar? Has your highly gifted child developed some very poor study habits? Are the two of you spending too much time arguing about getting the homework done?

The beginning of a new school year is a wonderful opportunity for students and parents to start afresh. Here are some tips to share with your gifted youngster:

Avoid distractions and interruptions. For effective studying, you need a quiet place to work. Don't cheat yourself. Turn off the stereo or TV while you are studying. You'll make fewer mistakes, and you'll get done sooner. Eliminate interruptions by enlisting your family's support in answering the telephone.

Give yourself periodic study breaks. Good study breaks are necessary to reduce fatigue and to permit you to recharge your mental battery, but do not use study breaks as an excuse for not studying. A good study break formula for students in sixth to ninth grades is:

30 minutes of work + a 10 minute break.

A good study break formula for high school students is:

45 minutes of work + a 10 minute break.

Eat well for maximum energy. Have a nutritious snack after school and before you begin studying.

Set goals for yourself. Establish realistic long-term and short-term goals. A long-term goal might be to graduate from high school with a B average or higher. A short-term goal is to receive a minimum of B on the next English book report. A daily goal would be to check to make sure that all assignments have been written down. Reward yourself when you meet your goals.

Determine the ideal time schedule. How do you spend your hours? Record all out-of-school activities for a week. Then review these to see how the schedule can be revised for maximum quality study times. Keep in mind high and low energy periods. Then write and post the new, ideal study schedule. Follow it for one week; revise again, as needed. Stay with your schedule without being reminded.

As your child develops a study schedule and works to become organized, praise the efforts and the progress made. Discuss problem solving strategies and creative thinking processes to help your child succeed. Find time to review your child's work and to help with mastery of new skills or completion of projects. Do everything you can to keep your child enthusiastic and motivated, including maintaining a positive attitude about your child's school and class. ■

VERA EBY is CAG State Parent Chair. She teaches high school and is the parent of two gifted sons.

ORGANIZE YOUR SUPPLIES AND MATERIALS

Make sure you have all the things you need to do the job.

☐ **paper**	☐ **dictionary**	☐ **assignment page**
☐ **hole punch**	☐ **watch or clock**	☐ **pens**
☐ **pencils**	☐ **binder**	☐ **ruler**
☐ **calculator**	☐ **school books**	☐ **pencil sharpener**
☐ **eraser**	☐ **white-out**	☐ **stapler**

☐ **telephone number of one student in each class**

WHY COLLEGE SO YOUNG?

BY LAUNA DAVIS

Sitting in a lecture hall with a hundred or so other college students, I took particular notice of my twelve-year-old son seated beside me. He was calmly looking around the large classroom, taking in the unfamiliar scene, paper and pencil neatly placed on his desk, waiting for the professor and for his college career to begin. I asked how he felt—if he was excited or nervous— and he said, "Mom, the only nervous person is you. I'm fine."

Chemistry and Survival 158 and its co-requisite chemistry lab were not subjects I had chosen to master. However, they were subjects chosen by my son, along with Microcomputers 258, during his college orientation at California State University, Los Angeles.

We arrived at the lecture hall early because I wanted to be sure he found the correct classroom and effectively oriented himself to his new environment. Since it was his first day at college and his first college class, I tagged along to help ease him into the adult world of college life. In all fairness, I think it was to ease me into accepting his early entrance into an adult world.

The experience can be likened to taking my son to his first kindergarten class and walking away knowing he was beginning a whole new phase of his life without me. This time I didn't just leave him at the classroom door with a reassuring teacher leading him into the classroom. This time I actually sat in his classroom watching as he took his first adult steps away from me. I felt pleasure and grief, excitement for the budding adult, loss for the boy that was disappearing.

As we sat in the lecture hall discussing class schedules and the art of note taking, another student interrupted our discussion and said, "I couldn't help overhearing your conversation and I was wondering if you are mother and son?" I indicated that we were, but that I was only auditing the class for the first day to help my son with his note taking skills and so forth. The student gave my son a strange look and bluntly asked, "How old are you anyway?" When my son said twelve, the student was incredulous and kept repeating to himself and to other students, "That kid's only twelve." We tried to avoid the curious stares and nervous glances from the other students and knew this would not be the first or last such encounter.

"My son loved college from the very beginning and begged us not to return him to junior high..."

My son was large for his age, so that if you only casually glanced at him in a campus setting you might assume he was an ordinary college freshman. I appreciated the student's surprise when he learned my son's age and I understood why he had thought it strange for a mother to go to college with her son on his first day of class.

Many people have thought it odd that I should have put my son in college at such a young age; in fact it was the most beneficial thing his father and I could have done. My son loved college from the very beginning and begged us not to return him to junior high school at the end of that first summer of classes.

We had not planned for our son to become a full time college student. In truth the whole idea of such an actuality was far from our minds, because even though he had always been a good student, he had never been a straight A student. He had to go to college to actually learn what it felt like to get straight A's. His elementary school grades had never been an indicator of his actual academic ability. They had, until college entrance, been more a reflection of his teachers' frustration at him for not keeping his work orderly or for his lack of social success in group work, where the teachers had accepted the grades given by the students in the group to each other.

We had always encouraged our son to work to a high standard, and he never thought twice about working on projects through his weekends or over a three-day holiday. The teacher would assign a five-minute speech with at least one handmade illustration. My son would give a fifteen- minute presentation and provide three or more illustrations. The quality of his work was recognized by his classmates who both applauded his presentation and dreaded following him.

Recognition from teachers was less reliable; sometimes he was penalized for not following instructions. My husband used to joke, saying, "If he's going to work this hard and do this quality of work, he might as well be in college."

When our son had scored in the 99th percentile on a nationally recognized test, he was given the opportunity to take the Washington Pre-college exam at CSU-LA for possible admittance into college. Since the test was similar to the SAT we decided it would be an excellent opportunity for him to see how he stood with his fellow students and had him take the exam. Within a month of taking the WPE he was also given the opportunity to take an actual SAT as part of the Johns Hopkins Talent Search. Interestingly enough there were only five points difference in the test scores. To our surprise and delight he took regional honors with Johns Hopkins and was invited to attend the summer session at CSULA.

Test scores and college grades in the summer session had proven that our son was capable of doing college level work, but more importantly it was his overwhelming desire to remain in college, coupled with his eagerness for and dedication to his studies that motivated us to grant him his wish to stay there. Neither he nor we have regretted his entrance into full time college study when he was only twelve.

My son would never have had the opportunity to attend college so young if it were not for the Early Entrance Program at California State University, Los Angeles.

To gain admittance the young scholar must score at least 1000 on the Washington Pre-college examination administered at CSU-LA. Students are put through a screening process to determine whether they are both emotionally and academically prepared for college. In addition they must write an essay stating why they are interested in college and what they wish to achieve. Prospective students are interviewed both with their parents and individually and meet in social situations in the EEP's rooms at the college.

After the students have passed the screening process they are given the opportunity to sign up for classes during the summer to determine if they can be successful in their class work and happy as college students. At the end of summer classes the students are again examined for eligibility and are either admitted to full time status, placed on a waiting list (maximum enrollment of the entire program is 40, a figure set by the university), or told to try again the next summer if they are still interested. The selection for entrance is not based solely on their grades but also upon the student's desire, maturity, and overall need for the program.

Once a student becomes a full-time EEPster he or she is required to participate in group meetings with the EEP director and receive guidance on class selection. All students receive mid-term reports from their professors that give the EEP director information about the student's class participation, grade, etc., so that the director can guide the students in ways that lead to academic success and avert potential failures. They are also encouraged to spend time in the EEP rooms. These rooms serve as a social center where EEP students can interact socially with kids their own age, share problems, and support each other emotionally.

"Many of the incoming students have suffered emotional and academic setbacks in their home schools..."

Many of the incoming students have suffered emotional and academic setbacks in their home schools and need to be helped out of the shells in which they have buried themselves. Experienced EEPsters who recognize the signs are often quite skillful at relating to extremely shy and inhibited students. They also are effective at offering advice about various classes and study skills. Some of the new EEPsters have been home schooled and have had little experience with children their own age. They find for the first time peers with whom they can successfully build lasting friendships.

The average age of the EEPsters is fourteen and most are tested between the ages of twelve and thirteen. Seventy percent are members of minority groups. More than fifty have completed their undergraduate degrees since the inception of the program. Almost all the early entrance students join the Honors Program at the university, and there they remain the top scholars at CSULA. It is not uncommon for an EEP student to be ranked number one in his or her class. Almost all the EEPsters go to graduate school

EARLY ENTRANCE PROGRAM

The program was begun at CSULA by Dr. Estelle Gregory, Associate Professor of Psychology and approved by the Academic Senate and President James Rosser in March of 1983. Dr. Gregory worked with Dr. Halbert Robinson, creator of the early entrance program at the University of Washington to form the program at CSULA. Although the programs have some similarity, only CSULA puts the qualified young students directly into college classes upon their acceptance into the program. ■

within two years of their graduation from college.

Since the commute to and from the university was in excess of three hours, I opted to stay on campus. When the director realized that I was spending my days at CSULA, she asked if I would spend my time in the Early Entrance Program's room and help out. With a unique opportunity such as this presented to me, I could not resist.

The program had only 25 students at that time, with thirteen of them being brand new EEPsters. They had only a large room with a tiny office attached, one director, and no real help from the university other than the office space provided to them. Jan Slatter, who has been the director of the program since 1985, was working long hours to expand the program and often worked without pay. Her efforts helped increase the EEP population to the maximum size the university will allow, and she arranged for them to expand their facilities. They now have an assistant director, a study room, a social area, and a small kitchen with a microwave, a refrigerator, a table and chairs.

For three years I stayed on campus working in effect as a surrogate mother in the rooms of the EE Program. I was in the EEP rooms for eight to twelve hours a day for four and sometimes five days a week. Needless to say I got to know the students very well. We played cards, worked puzzles, and shared confidences. Sometimes I was the ear that listened to them practice their speeches. Other times I struggled to expand the boundaries of their logic to help them bridge the gap between their academic knowledge and the knowledge that comes only with years of living. I was their sounding board.

What fascinated me most was watching the transformation experience by many of the students. It was a change that took them from being shy, withdrawn individuals to being outgoing, confident young scholars. Listening to them talk about their past experiences with teachers and peers their own age was like listening to echoes of the stories told by my own son. It was comforting to know he was not alone in his struggles for academic recognition, but at the same time it was painful to realize how common and real is the hurt suffered by our brightest students.

"His confidence was increasing, and his interest in life was returning. A child who had only months earlier been depressed and discouraged was now talking about his

My son was one of the shy and inhibited new EEPsters when he first began in the program. The older EEPsters would approach him and he would rebuff their attention because he did not trust most students his age. He had left a school and students that thought his head was a place to bounce a ball off of or that his lunch was something to be stepped on. He was withdrawn from and angry at young people.

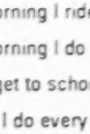
The EEPsters recognized his pain and slowly worked to engage his attention. First they played chess with him because it did not require conversation. The next step was to ask him about his classes, and he would respond with one or two word sentences. After struggling for any area of interest that would spur on conversation, they hit upon computer games. They noticed him perk up when the room conversation was about computers and they took the hint. They now had him engaged in conversations that were four and five word sentences. Computer talk led to other subjects, and after six months he was socially active and had made friends. The students would not let him just sit and sulk in the EEP room for hours between his classes. Their patience and persistence helped change his life.

Academic work was never a major problem for him. One of the first things he said after returning from an Honors English class was, "They actually want me to think! They don't necessarily agree with me, but they are excited about creative thinking." He was beside himself, and his excitement was obvious. College offered him the approach to learning that he had been seeking all his years in school. To make matters even better, he was receiving A's. His confidence was increasing, and his interest in life was returning. A child who had only months earlier been depressed and discouraged was now talking about his future. He had friends and hope. When people ask me if I think I robbed my son of his childhood by putting him in college so young, I respond, "No, I've given it back to him." ■

LAUNA DAVIS is a parent. She resides in Northridge, CA.

Every morning I ride the bus
Every morning I do not fuss
When I get to school I play
Just like I do every day
I wait for the bell to ring,
Then I go home with a zing!

—Joe Huch
Grade 3
Patton School, Garden Grove



PRINT RESOURCES

YOUR LIST OF JOURNALS ON GIFTEDNESS

In response to your requests, we offer this reading list of popular current journals:

Challenge
One of several publications by Good Apple, PO Box 55682, Boulder, CO, 80323-5682. Especially designed for use by classroom teachers in upper elementary grades; includes reproducible activity pages.

Communicator
The official publication of the California Association for the Gifted, 426 Escuela Ave., Suite 19, Mountain View, CA 94040. Articles especially focused on gifted education in California; of interest to teachers, administrators and parents.

Educational Oasis
One of several publications from Good Apple, PO Box 55682, Boulder, CO 80323-5682. Designed for teachers of middle grades 6–9; includes teacher-ready activities.

Gifted Education Review
P.O. Box 2278, Evergreen, CO 80439-2278. Synthesizes current publications, articles and research on the latest developments in gifted education.

Gifted Child Today Magazine
Prufrock Press, PO Box 8813, Waco, TX 76714-8813. An informative bi-monthly publication with articles of interest to both parents and educators.

Gifted Child Quarterly
The official publication of the National Association for Gifted Children, 1155 15th Street N.W., Suite 1002, Washington D.C. 20005. A scholarly journal with articles of interest to professionals.

Imagine
Johns Hopkins University Press, 1715 N. Charles St., Baltimore, MS 21218-4319. Containing interesting and useful information for college-bound secondary students.

Journal for the Education of the Gifted
The official publication of the Association for the Gifted, a division of the Council for Exceptional Children, 1920 Association Dr., Reston, VA 22091. A journal aimed at professionals in the field.

JSGE: The Journal of Secondary Gifted Education
Published by Prufrock Press, PO Box 8813, Waco, TX 76714-8813. Originally presenting articles principally from a teaching perspective, this journal has evolved into one focused on diverse topics from multiple research approaches and varied philosophical orientations.

Roeper Review: A Journal on Gifted Education
Published by Roeper City and Country School, PO Box 329, Bloomfield Hills, MI 48013. A focus on current research and issues in the field of gifted education.

Understanding Our Gifted
Open Space Communications, Inc., PO Box 18268, Boulder, CO 80308-8268. A bi-monthly journal addressing the intellectual, social and emotional needs of gifted youth. ■

HAIKU FESTIVAL

A grassy green hill
So beautiful in the springtime
With budding green leaves

—Matthew Doria
Grade 2
Patton School, Garden Grove

Little lady bug
Hiding under the big tree
Flies off and leaves me

—Joy Vernon
Grade 2
Patton School, Garden Grove

Weird caterpillar
Likes to lie in the sun
Trying to find food

—Holly Girard
Grade 2
Patton School, Garden Grove

IMPLEMENTING CURRICULUM COMPACTING

SUGGESTIONS FOR ASSISTING TEACHERS

BY MARCIA B. IMBEAU

Although school district administrators may determine that there is a need for the curriculum compacting process to be a part of their teachers' repertoire of teaching strategies, the issues surrounding effective ways of assisting teachers with this effort are all too often ignored. Frequently school districts send teachers to an inservice presentation of a new teaching strategy and then assume that the inservice has provided sufficient information for teachers to be able to implement the procedure.

This article will examine several issues that may be helpful to districts who are wanting to provide support for their teachers who are implementing curriculum compacting in their classrooms.

WHAT DO SOME OF THE EXPERTS TELL US?

The research on effective staff development practices in education suggest four key concepts that a successfully implemented innovation process should follow. A closer examination of these concepts may prove useful with the implementation of curriculum compacting.

Coach teachers. Developers of effective staff development programs suggest that coaching teachers in the implementation phase of a new classroom practice increases teacher use of the innovation (Guskey, 1986; Joyce & Showers, 1982, 1983, 1987). Joyce and Showers (1983) found that only five percent of the teachers they studied were able to incorporate a new strategy without assistance. Sparks (1986) found that peer coaching was an effective strategy to change teaching practices. These studies suggest that the traditional, single meeting inservice on a new approach will not be sufficient to change the practices currently used by teachers.

Address beliefs and attitudes of participants. An effective staff development program must address beliefs and attitudes held by participants. Fullan (1990) states, "The problem of harnessing staff development is compounded by its increasingly sprawling prominence. On the one hand, it is correctly seen as the central strategy for improvement. On the other hand, it is frequently separated artificially from the institutional and personal contexts in which it operates." (p. 4)

Thus, ignoring the personal contexts for those persons involved with innovation adoption limits the effectiveness of staff development efforts for training teachers.

Hord, Rutherford, Huling-Austin, & Hall's (1987) research identified specific phases, entitled Stages of Concern, through which individuals move in the adoption of a new innovation. Concerns are defined as "an aroused state of personal feelings and thoughts about a demand as it is perceived" (Hall, George & Rutherford, 1979, p.5). They report that concerns are influenced most by the kinds of support and assistance participants receive as they attempt to implement a new practice (Hord, Rutherford, Huling-Austin, & Hall, 1987).

In addition, individuals' attitudes toward any innovation can impede or advance the acceptance or rejection of the innovation. An attitude is defined as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (Fishbein & Azen, 1975, p. 6). While a person's attitude comprises only one aspect of a person's behavior, Severy (1974) states that "attitudes can be expected to lead to a particular kind of behavior given that the situation and other constraints make the behavior appropriate" (p. 2). Guskey's (1986) theory on teacher change proposes that teachers' beliefs and attitudes are changed only after they are able to experience the innovation in their classrooms. In addition, other factors such as years of teaching experience, grade level taught, and specialized training may affect the adoption of a new practice.

Use successful presentation methods. The third concept of effective staff development is the manner in which the new practice is presented to the target audience. The common characteristics of a successful inservice presentation that encourage and sustain change are: (1) the innovation is presented in a clear and explicit way, in concrete terms rather than abstract; (2) the personal concerns of the teacher must be addressed in a direct and sensitive manner; and (3) the presenter of the innovation is viewed as a credible person by those responsible for implementation of the new practice (Guskey, 1986; Hall & Loucks, 1978; Knowles, 1978).

Recognize needs of adult learners. Finally, an effective staff development practice must recognize the special needs of adult learners. That is, the instruction must shift toward problem-centeredness rather than subject-centeredness (Knowles, 1978; Schlossberg, 1987). Adults are in-

terested in learning relevant information that will assist them in dealing with problems associated with their work.

LESSONS LEARNED

Over the last ten years, I have presented several inservice presentations and provided technical assistance to teachers in several states who are interested in implementing curriculum compacting in their classrooms. This experience and my own research has provided me with valuable information that has influenced my thinking about some sensible suggestions others may want to review for possible use in their district.

PROVIDE INFORMATION

First, while teachers will most likely agree that they have high ability youngsters in their classrooms and compacting appears to be a useful strategy to address the educational needs of these students, they may feel that they do not have enough information about the procedure to proceed. My experience has taught me that this sentiment may or may not actually refer to having enough information about the process. I firmly believe the saying, "teachers can not do what they do not know" and, therefore, district personnel will need to examine closely the knowledge teachers have about the procedure before implementation.

The other side of this sentiment may actually refer to other issues. In working individually with teachers, I sensed that teachers were actually expressing concern that they did not feel that they would have the freedom to try the new practice without fear that it might affect their performance evaluations. While we would expect students to make mistakes during the process of learning new skills or acquiring information, teachers do not always believe they have the luxury to try a new strategy and learn from their mistakes. Therefore, what may need to be a guiding principle in districts interested in implementation strategies is to support initial efforts of teachers while recognizing that some teachers will be more effective in the earlier stages of adoption than others.

PROVIDE SUPPORT

Secondly, additional supports may be necessary for teachers to implement the procedures with confidence. I frequently found teachers with whom I was working anxious to share their efforts with me upon a return visit to their classroom. While that was one of the reasons for my visit, I was struck by the idea that perhaps we in education expect that new processes will be implemented by teachers and, therefore, it is not necessary to provide any recognition for those efforts. While some research suggests that the best way to have teachers make changes in their teaching practices occurs when they see the results of student outcomes, I believe it is also necessary for us to recognize the efforts of teachers along the way (Guskey, 1986).

Perhaps creating a network of teachers who are trying the procedure would provide a forum of support for the sharing of ideas, successes, and challenges. However, we would do well to suggest that such a group recognize that there will be differences in the ways in which each teacher implements compacting in his/her classroom and this aspect of the process is a strength of the procedure. Curriculum compacting addresses the problem of a "one size fits all" curriculum and this same idea must be expected in the implementation of the work.

DECIDE WHO WILL START

A final lesson that districts may want to review is examining closely the most likely place to begin the procedure. While I have worked with teachers at all grade levels K-12 representing various discipline areas, there may be particular teachers at a specific grade level who appear to be good candidates for successfully implementing curriculum compacting. It is also possible within a building to focus on one or two grade levels of teachers who are interested in exploring additional ways to meet the educational needs of their ablest students. Therefore, districts may want to consider that the initial inservice be viewed as the introductory phase of the implementation process and the additional supports and follow-up will target early-on those teachers who have expressed an interest in making compacting work in their classrooms. This idea reflects the insights suggested by Barth (1990):

> "Most attempts at staff development are attempts at group growth. A meeting for the entire faculty is called to induct all teachers in a new form of pupil evaluation. All the fourth-grade teachers in the district attend a workshop on a new social studies curriculum. It is no surprise that most attempts at large-group instruction for adults meet with the same mixed success as attempts by teachers to instruct an entire class of students in a uniform way. If teachers differ in their ability to examine practice and have others examine it, then perhaps our attempts to help them grow professionally should be correspondingly different. The conditions under which each teacher learns are probably as varied as those under which students learn. We hear talk of matching learning styles of students with teaching styles of adults. It would be well to also contemplate the implications of different adult learning styles." (p. 54)

SUMMARY

The information presented here clearly suggests that there are a number of ideas to consider when

schools are involved with implementing curriculum compacting. However, the most important consideration is related to a frequently made comment at my in-service presentations which states that this teaching practice is just "common sense". The same could also be said of the suggestions and the research described in this article. However, as one of my good friends so often reminds me, when I complain about why something isn't being done about a problem I see when it looks like all that is needed to solve the problem is "good ol' common sense", "common sense is often anything but common." ■

MARCIA B. IMBEAU, Ph.D., Assistant Professor, University of Arkansas.

A list of references for this article can be obtained from the *Communicator* editor.

Jockey
Horse rider
Colorful silks
Kentucky Derby
Triple Crown
Title Defender
—Diane Stearns
Grade 5
Allen School, Garden Grove

Teacher
Homework giver
Educated person
Rule enforcer
Sometimes strict
My mother
—Joe Rogers
Grade 6
Allen School, Garden Grove

Business Owner
Responsible person
Hard worker
Good earner
Patient adult
Good Boss
—Daniel Feliz
Grade 5
Allen School, Garden Grove

CURRICULUM COMPACTING in Mathematics

STRATEGIES FOR SUCCESS

BY M. KATHERINE GAVIN

Open any upper elementary math textbook to chapter one and you are more than likely to find a series of pages reviewing computational skills.

What is the reaction of students returning fresh from summer vacation ready to embark on a new learning adventure? Simply one word: BORING! For those students who have already mastered the skills, it is especially boring, a waste of their time and talent, and a sure way to turn them off to math.

Yet, for some reason, most teachers feel compelled to follow the textbook curriculum design, and so day one of the school year is page one of the math book. Unfortunately, the end of the school year often does not match up with the end of the math text and the challenging and interesting chapters such as probability, statistics, and often even geometry are left unexplored. This is an injustice to students and to the study of mathematics.

Besides textbook considerations, most teachers today are also faced with differentiating curriculum for students within a heterogeneous classroom. No easy task—to be sure!

Curriculum compacting is a strategy found to be effective in providing assistance to teachers in both these areas. In fact, it was found in a recent study (Reis, Westberg, Kulikowich, Caillard, Hebert, Plucker, Purcell, Rogers, & Smist, 1993) conducted by researchers at the National Research Center on the Gifted and Talented that mathematics was the subject most frequently compacted for students. Because they are sequential in nature, most mathematical skills can be easily assessed and students who demonstrate mastery can then move ahead to higher skill levels; a perfect fit for the compacting process. Moreover, compacting is especially appropriate for mathematically talented students who reach understanding sooner and often possess an intuitive grasp of concepts without the need for step-by-step explanations and repetitive examples.

THE COMPACTING PROCESS

When learning about compacting, teachers generally have two basic questions: (1) How do I decide what material students have already mastered? and (2) Once identified, what do I do with students who have mastered the material? In addressing the first question, it is rather ironic that the mechanics of compacting are aided greatly by the culprits that create the need to compact, i.e., the textbooks. It is easiest to start with the pretest or posttest for the unit or chapter of instruction as a means of assessing students' strengths and weaknesses. These predesigned tests are good tools for assessing math skills such as computation of whole numbers, decimals, and fractions.

Determining an appropriate mastery level is a personal matter, either for an individual teacher or an entire school system. Generally 85 to 90 percent mastery of skills or concepts on a pretest is a good indication that students know the material. An item analysis helps to show any areas of weakness that can quickly be mastered on an individual or group basis during the compacting process. Assessing more complicated mathematical concepts, such as interpreting data and making predictions based on this analysis, requires a different approach.

It is imperative, especially in light of the National Council of Teachers of Mathematics (NCTM) emphasis on problem solving and mathematical communication, that conceptual assessment go beyond multiple choice, pencil-and-paper tests. In this case, performance-based activities and/or open-ended test questions in which students are required to use math vocabulary to justify their reasoning and be creative in their solutions are more appropriate evaluation tools. Certainly, this takes more time and energy than simply administering a pretest from the text, but it is necessary in order to gain a true picture of students' mathematical understanding. It is also not that difficult!

"Enrichment involves increasing the depth and breadth of the curriculum and creating a higher level of intellectual dialogue in which students can engage."

An introductory problem solving activity can be used with all students as a motivational tool in introducing the new chapter and, simultaneously, can serve as the performance-based activity. Teacher observation as students engage in the activity can reveal a great deal about students' strengths and weaknesses in the area. In addition, open-ended questions can be added to the pretest. A typical question to assess geometric concepts might be the following:

Draw two different irregular octagons each with a perimeter of 32. State three ways in which the figures are alike and three ways in which they are different.

Some publishers now include these types of questions in their support packages. A good tip is to look through the alternative tests and enrichment activities given as "extras." These are often the best materials in the program! Some states using mastery tests (for example, Connecticut and Kentucky) have developed the tests with the NCTM Curriculum and Evaluation Standards (1989) in mind and provide excellent open-ended questions in their guidebooks for teachers.

ACCELERATION AND ENRICHMENT OPTIONS

Once students have compacted out of the regular curriculum, the next big question surfaces: What do I do with these students now? Although the specific answer often depends on the individual student, the overall solution is upgrading the curriculum. Both acceleration and enrichment come into play. For students who demonstrate a great deal of mastery of the entire grade level work, clearly some form of acceleration must take place. These mathematically talented students can attend math class in a higher grade level, be tutored by an older student or adult mentor during math class, or work on advanced material in the regular classroom. It is important to plan beyond the current school year by getting parents, other teachers, and administrators involved so that a challenging, appropriate program with long range continuity is put into place.

Be aware that acceleration alone is not enough. Simply putting a student into the next level of a text designed for general instruction is not appropriate. Enrichment is a necessary partner to ensure a stimulating math program for these students. In fact, for some students who demonstrate mastery of one or two specific topics, enrichment alone may be appropriate to develop their particular talents. However, this does not mean giving them mind benders or logic puzzles after they have finished their work. Enrichment involves increasing the depth and breadth of the curriculum and creating a higher level of intellectual dialogue in which students can engage. Because this is a challenging task, some teachers like to start with just one or two students whom they can easily identify as needing compacting. After pretesting, these students can begin an individualized math program for the unit of instruction, including work on any concepts not yet mastered. Using The Compactor, (see p. 31) the teacher can work with the student in designing a unique master plan.

See RESOURCES, 33

CHRISTINE KLESSIG
Grade 6
Las Virgenes School District

BOOK REVIEW

BY GERI WILLIAMS

Smart Girls Two: A New Psychology of Girls, Women and Giftedness,
Barbara A. Kerr, Ph.D.
Ohio Psychology Press
1994, 270 pp.

"It is not enough simply to raise the aspirations of gifted girls; it is necessary also to help them become more deeply committed."

In this, her third book, Barbara Kerr expands and extends the research into why smart girls and gifted women frequently fail to develop their potential.

In her first book, *Smart Girls, Gifted Women*, Kerr, an Arizona State University professor, presented the 10-year follow-up of a study conducted with a group of girls who graduated from a special school for gifted and talented children. She found that four patterns of development emerged with the women: full-time homemaking, in which half of the women were engaged; traditional female occupations, another quarter; dual career couples, only a few; and single professional career women, also just a few.

Many of these women had compromised their dreams of achievement in order not to inconvenience others and found little support for their goals throughout adolescence and young adulthood. Some, however, had found ways to transform their lives with limited resources; a few had transformed their professions to make room for women like themselves. Kerr asserts that, historically, society has treated the nurturing of talent in women as optional.

Smart Girls Two presents the 20-year follow-up. Kerr now finds that a more complex categorization is needed, for while some women had continued as before, others had radically transformed their lives, and a new group had emerged, the "overwhelmed," who were having difficulty with the most basic issues of survival and sanity. A smaller proportion of the group were happy and satisfied with their lives. Kerr concludes that choices made in late adolescence create clear limits on adult attainments.

Kerr analyzed the lives of eminent women—poet Maya Angelou, Nobel Peace Prize winner Rigoberta Menchu, and actress Katherine Hepburn. She discovered that an underlying characteristic of women such as these who follow through on their goals and achieve their dreams is the capacity to "fall in love with an idea." Also apparent in these women's lives is the determined refusal to acknowledge limitations of gender, an ability to combine roles, a strong sense of one's personal identity, taking responsibility of oneself, and a mission in life. Guidance and encouragement during adolescence are critically important.

Kerr states: "A career is not a job. A career is a vocation, a mission in life, a belief in the fulfillment of, and the urge to exercise, one's energies and talents...By defining achievement and career as the maximum use of talents in the pursuit of a vocation, perhaps women can stop defending their lifestyles and can search for those challenges that will allow fulfillment of potential."

Kerr feels it is not enough to raise the aspirations of gifted girls; it is also necessary to help those whose aspirations are already high to be more deeply committed to those dreams.

Rather than simply providing gifted girls with excellent role models of women who are engineers and doctors, we should provide models of women who are passionate about their work.

Rather than helping them live with inequitable educational practices, we should teach them to demand equality in the classroom and to create equality in their own families.

The last chapters include guidance strategies to help prepare gifted girls for life in the next century. Barbara Kerr is a strong advocate of girl-friendly education, including single sex education. She has developed research-based interventions for raising the aspirations of girls, for helping them develop a sense of purpose and for setting clear goals for their work and relationships.

What must be done for gifted girls?

- we must find them;
- we must nourish them by providing as much reading or computer time or music as they crave;
- we must guide them;
- we must love them;
- we must make room for them.

As a psychologist, Barbara Kerr has chosen the study of giftedness as her own particular mission. *Smart Girls Two* shows the limitless challenges and opportunities for bright women to work arduously, to love deeply, and to live fully. Barbara Kerr reaches her own goal with this book. It is reader-friendly, thought-provoking and powerful, and should serve as a valuable resource for educators and parents alike. ■

GERI WILLIAMS is the CAG teacher representative for the Santa Lucia region.

CURRICULUM COMPACTING:

AN APPROPRIATE INTERVENTION FOR GIFTED UNDERACHIEVERS

BY THOMAS P. HÉBERT

"I'll just get the grades. Colleges back in the states won't know it was too easy for me!"

Josh made the comment with a sheepish grin as he was interviewed on the schoolgrounds of the American School of Asunción in Asunción, Paraguay. Josh was living overseas with his family and was enjoying a relaxed high school career. Josh's father was involved with American diplomatic corps and the family had lived in a number of countries. He maintained a grade point average of 3.3, but he readily admitted that the academic challenge in his junior year was nonexistent.

Josh complained that his high school's curriculum was much too easy, and he missed the International Baccalaureate Program he had been involved with in his previous schools. Josh was fluent in three languages and had successfully passed three rigorous Advanced Placement exams in Spanish, French, and Italian as a high school sophomore. At home Josh was busy writing music and performing with a local rhythm and blues band. A gifted musician, Josh taught himself how to play several musical instruments and had acquired quite a reputation in the Paraguayan community as he performed in concerts throughout Asunción.

Josh was honest in describing how he was "playing the game" and "making the system work for him." He knew he was not working up to his potential and confessed that he could be achieving much stronger grades. Far more concerned with his music, Josh explained that school was simply too easy, classes were boring, and he was simply making the grades he needed to stay "out of trouble." As a high school junior, Josh assumed that his search for the right college would be a smooth experience since stateside university admissions officers would never guess that he had not been working up to his full potential.

Tyrell attended high school in Birmingham, Alabama and worked over 35 hours a week at a local health spa. Tyrell described high school courses that lacked challenge for him, but he was not concerned since he often was close to falling asleep after having functioned on few hours of sleep all day. He explained,

> "Yesterday I took a quiz in Geometry. I thought I failed miserably. Lately, because of my job at the gym, I have been too tired in class. This is period 6. It's hard to pay attention by that time. I took this quiz and I didn't know what I was doing. I guessed. She gave me my paper back and she said, 'You got the highest grade in the class. Obviously you have been misplaced. You should be in the Advanced Placement class.' Everybody in there is failing and I have a B average. Everybody else is paying attention and taking notes and I never do. It's actually 12:20 by the time class starts. I sit at the back of the room and nod off."

Tyrell was a hands-on learner, and as a young child he was known throughout his neighborhood for traveling to the junkyard with his friends in search of old bicycles. He would take apart bicycles and rebuild them into what he referred as his new "inventions." The young builder admitted that he never read a book at home, yet he consistently scored in the 99th percentiles on achievement tests. Tyrell was frustrated with a curriculum that did not address his learning style or nurture his talents. To deal with the problem, he slept through high school and worked at the health club where he enjoyed repairing the gym equipment.

WHAT DO WE KNOW ABOUT GIFTED UNDERACHIEVERS?

Josh and Tyrell's stories are troublesome, for nothing may be as frustrating to educators and parents as bright young minds that appear to be wasted. In fact, concern over the problem of underachievement, especially among potentially gifted students, has increased substantially in recent years (Reid, 1991).

Professionals have agreed for decades that the phenomenon of underachievement is complex, baffling, and challenging (Passow & Goldberg, 1958; Rimm, 1986; Whitmore, 1980). Although considerable research on underachievement among the gifted exists, the only consensus of researchers seems to be the factors that contribute to the problem. Evidence about effective intervention strategies is inconsistent and inconclusive.

Two major approaches underlie attempts at intervention—counseling and education. While some evidence supports positive gains using family counseling (Colangelo, 1984; Rimm, 1986), psychological interventions often depend upon a long term commitment by the family, the availability of appropriate psychological services, and the assumption that the primary causes of underachievement lie within the student and/or the home. The role of educators in contributing both to the causes and possible solutions to the problem are often ignored.

See REMEDIAL Rx, 35

BY TERRIE GRAY

WALKING LESSONS

"The kind of knowledge children most need is the knowledge that will help them get more knowledge."

—Seymour Papert, *The Children's Machine*, p. 139

If we were to travel to a new world that had a different atmosphere and gravity field than our own, we would need to learn how to walk all over again. And none of us, I imagine, would resist assistance from our peers in the process of putting one foot before the other so we could navigate freely.

So it is with education today. We ***have*** traveled to a new world; many call it "Cyberspace." As we bring the Internet and the Information SuperHighway into our classrooms, we need to re-examine how we build the curriculum—we need to figure out all over again how to walk.

Many educators, researchers, and policy makers refer to the use of technology as a "tool," yet computers and telecommunications bring much more to the classroom than simpler tools like pens, pencils, and protractors. Online access adds a complexity and a richness to the classroom; an additional dimension that demands careful planning and preparation. Without this preparation, we are justly condemned by those who accuse educators of "carelessly throwing technology at the students and providing access to information without a plan to help the students acquire the skills necessary to manage that knowledge appropriately."

A 1993 report from the Bank Street College of Education's Center for Technology in Education describes the rewards of integrating telecommunications across curriculum in this manner: "The most highly rated incentives for using telecommunications with students include expanding students' awareness about the world, accessing information, and increasing students' inquiry-based and analytical skills." (California Department of Education, *Building the Future, K–12 Network Technology Planning Guide*, draft. p. v.)

The guide devotes an entire chapter to the benefits of networking. The authors of this document describe the Internet as a "serious, but engaging tool for fostering student curiosity" that "literally demands an interactive relationship between the individual and the information he/she is receiving." Students involved in telecommunications are "encouraged to participate, ask questions, dig deeper, and study more extensively." Their "curiosity and motivation increase when learning is linked to real-world problem solving and they develop a much greater interest in diverse perspectives." (p. 22)

This article describes an eight-step model that should help most classroom teachers design and implement successful curriculum units that incorporate some form of online activity.

STEP 1—IDENTIFY LONG-RANGE OBJECTIVES

Like Alice's Cheshire Cat and Dorothy's Scarecrow caution, we need to know our destination before we embark. Many voices eagerly tell us what we're "supposed" to be teaching. The business world is heard in the SCANS report released by the Department of Labor. This report asserts that education should provide students the competence to use resources, information and technology; that students must learn to work with one another in teams and that they must have a solid foundation of basic, conceptual, and personal skills. (Margaret Riel. The SCANS Report & the AT&T Learning Network: Preparing Students for Their Future. *Telecommunications in Education News*. International Society for Technology in Education. Vol. 5, No. 1. Fall 1993, p. 10.)

The official voice of the California State Department of Education is heard in the Subject-Area Curriculum Frameworks which describe several essential principles including:

1. (Language Arts, p. 26) Instruction must foster students' creative, critical and independent use of language; and enable students to communicate to others the best of what they have thought and understood.
2. (p. 3) Effective programs emphasize...teaching...in meaningful contexts.
3. (Science, p. 5) Technology can provide conduits to new information, experiences, and an opportunity to experiment and fail in a safe environment. The teacher evolves from a disseminator of information to a facilitator of students' learning.
4. (p. 179) As far as possible, students should be involved in the control of [the learning] experience.
5. (History/Social Science, p. 7) Critical thinking skills are to be included at every grade level.

6. (p. 25) Three skills are essential: to define and clarify problems; to judge information related to a problem (sort facts from opinions); and to solve problems and draw conclusions.

Our first step is the same we take in the process of designing any curriculum unit: we must determine the over-arching objectives of study, while keeping in mind the principles described above. Many of us are familiar with the design construct of "At the end of this unit, students will be able to..." My recommendation is that objectives be written in four areas: content mastery, technical skills, group dynamics and project design.

STEP 2—IDENTIFY CONTENT SCOPE AND SEQUENCE

This step is simple. Where do you want to begin? How much material will you cover? If you are incorporating telecommunications into a unit you have done before, determine not only how such an activity will enrich the unit, but when it best fits in. You may need to set aside one day a week as long-distance learning day.

Do you need to teach students how to use the computers, the software, or how to use e-mail? If so, I recommend you introduce necessary technical skills before requiring students to use them in their study of the content area. In my work with seventh grade students, I find that introducing new computer skills or new software at the same time as I introduce new science material overwhelms many students.

A very important guideline to remember is to begin modestly. Your first telecommunications project should be short and simple. Large and complex projects tend to "burn-out" partners.

STEP 3—INVENTORY YOUR RESOURCES

As you collaborate with your department or grade-level partners, sketch out a list of everything you have available for creating a meaningful learning expeience for your students. Once you have made such a list, choosing what to emphasize during the term of the project becomes more manageable. Resources to consider include text and electronic reference materials, videos, online resources, computer hardware and software, manipulatives and creative materials, guest speakers and expert mentors.

STEP 4—SELECT A TELECOMMUNICATIONS PROJECT STRUCTURE

Judi Harris, of the Department of

The Wetlands Project

The Wetlands Project is one my seventh grade science students tackled this year as part of a traditional unit we do on ecology and field study. It follows the steps of integrating telecommunications into the curriculum.

Step 1: Identify Long-Range Objectives

This unit incorporates the Framework themes of Systems and Interactions. It encourages students to investigate how an ecosystem works and to apply their understanding to make practical decisions governing their own behavior. It targets the SCANS teamwork principle and Framework skills described in "Walking Lessons numbers 1, 2, 5, and 6 in

Step 2: Identify Content Scope and Sequence

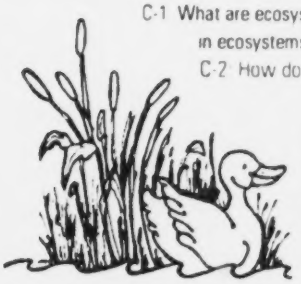
Extensive classroom preparation and presentations from U.S. Fish and Wildlife volunteers encouraged students to address the questions posed on p. 136 of the Science Framework.

C-1 What are ecosystems, and how do organisms interact in ecosystems?

C-2 How does energy flow within an ecosystem?

C-3 How do ecosystems change?

C-4 What are the responsibilities of humans toward ecosystems?



Following are some of the student outcomes we identified. At the end of the unit, students will be able to

1. Describe a "typical" wetlands ecosystem.
2. Identify several species of waterfowl.
3. Describe the life cycle of migratory birds, including morbidity and mortality resultant from avian cholera, avian botulism, and lead poisoning.
4. Identify members of typical wetlands food chains.
5. Explain the importance of conservation legislation.
6. Describe a variety of perspectives re: land and water use in the wetlands area.
7. Explain the impact of changing the pH or temperature of water in the wetlands.
8. Calculate the approximate energy available to migratory birds from the natural food source in the area.
9. Identify the main migratory paths in the Western Hemisphere.
10. Compare and contrast the local wetlands to a distant wetland (The telecommunications component).
11. Create and utilize a database.
12. Prepare and present a multimedia report.

Step 3: Inventory Your Resources

We had access to the following materials, but found we couldn't find time to incorporate them all in the six weeks we devoted to this study.

- Prentice Hall text, Ecology of Living Things
- Videodisks: Aquatic Ecosystems, Paul Parkranger and the Mystery of the Disappearing Ducks, Science Sleuth—"Dead Fish at Union Lake"
- Science 2000: Unit 2—The Lake Problem
- Turner Adventures: Okeefenokee Swamp Electronic Field Trip
- Internet access in all science classrooms, as well as student computer

Curriculum and Instruction at the University of Texas, Austin, describes a variety of online problem-solving structures in her spring 1994 "Mining the Internet" articles in ISTE's *The Computing Teacher*. Below are some of the projects she describes.

- **The Information Search.** One version provides clues to students who compete against other classrooms to be the first to solve the mystery, such as school identity in Geogame. (Projects like this are listed in the Kidlink area of the World Wide Web. Check the address http://www.kidlink.org/)

  Another way to involve students in searching for information would include using the Internet and World Wide Web as research tools. If you have Web access, see an example of this type of project at http://www.chicojr.chico.k12.ca.us. Click on the button, "student projects."
- **Electronic Process Writing.** Students post writing for feedback. This kind of project benefits regular classroom students and home schooled students who do not usually have a peer group available for feedback and evaluation.
- **Sequential Creations.** Students at the home site start a story and send it out to partners who write the next section. They in turn pass it on to someone else who finishes it off and returns it to the original site. This kind of creative activity can also be used with a fine arts curriculum with the use of fax machines or computer graphics. Student work can then be published on the World Wide Web if the school has a home page. This kind of project can generate student interest in and understanding of diversity and cultural differences.
- **Parallel Problem Solving.** Telecommunications can facilitate the gathering of experimental data and can illustrate the principle of replicating results. Partner classrooms conduct identical experiments and compare their findings.
- **Partner Classrooms.** Teachers from distant schools could arrange for students to respond regularly to curriculum materials, e.g., novels, historical events, or to current events. I can envision social studies classes sending out a "News Report" to their partner once a week and then responding to the report they receive. This project would be similar to the parallel problem solving, but would be of

workstations, networked printers, CD-rom drives and laser disc players
- Chico Creek Nature Center: Dioramas and Displays about California Wetlands
- U S Fish and Wildlife Service: Personnel for guest lectures and assistance in locating additional resources
- Sacramento National Wildlife Refuge: site of the field study

Step 4: Select a Telecommunications Project Structure

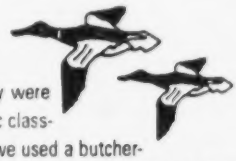
Our project consisted of data collection. We asked our partners one question per week about wetlands in their area and field studies they undertook. Some of our partners were *not* in classrooms—a resident of a wetlands area, a specialist at the Monterey Bay Aquarium, and a high school student—and sent unique data.

Step 5: Launch the Project

Here's the wording of our invitation "7th grade science students seek partners for ecology study of Wetlands Migrating Waterfowl. The project runs from October 1994 to January 1995. We will be posting a question per week and exchanging data about a field study at a nearby Wildlife Refuge. Please respond to TerrieG@aol.com by September 15, 1994 if you are interested in participating."

Step 6: Classroom Management

Students were assigned specific partners. Each group of students was then responsible for maintaining a folder with the messages from that partner. After each guest speaker presentation, and after the field study, students would draft messages and questions for their partner. In other words, they were responsible for building a relationship with a specific classroom or mentor. To keep the entire class informed, we used a butcher-paper chart as an on-going database. It was easy to see which partners faithfully answered the question-of-the-week.



Step 7: Student Assessment

Student mastery of content was measured through performance on tasks in the field like estimating the number of waterfowl. Understanding of ecology principles was evaluated through their responses to a packet designed to correlate with guest speaker presentations, and via a scavenger hunt based on the Nature Center dioramas.

Students received credit for their work on the various parts of the telecommunications activity. (See step 6 in "Lessons.") Multi-media projects were evaluated according to standards for group work, individual task planning, design of the project and clarity of content presentation.

Step 8: Don't Travel Alone

We're very lucky at Chico Jr. High School. We have a cohesive and supportive science department faculty as well as visionary, involved, supportive administrators who kept informed about our telecommunications and project progress throughout the unit. The administrators served as liasons with the U.S. Fish and Wildlife staff and hosted a visit of these specialists at our school site to see student work. In addition, parents and community members were encouraged to accompany students on field studies, so we had LOTS of support during this project. see snapshots and data of our experience on our Web page: http //chicojr.chico.k12.ca.us. ■

longer duration.

- **Electronic Field Trips**. An ideal project for schools that are on the World Wide Web. Student response to field trips and photos from the event can be posted locally and then shared globally.

STEP 5—LAUNCH THE PROJECT

Set the parameters of the project. Decide how long you want it to last and determine what kind of information you want from your classroom partners. Then, post this data in a brief invitation to participate.

Because knowing *where* to post the invitation is often a problem, I include a copy of a message I received via ISTE's Telecommunication Special Interest group. Before you post your invitation, it's a good idea to scan other postings to see what kinds of projects already exist. You may be able to accomplish your objectives by joining someone else's project.

As more and more schools connect to the Internet, teachers find themselves searching for appropriate online projects to integrate into the required coursework. Global SchoolNet (http://gsn.org/gsn/projects.registry.html) has taken the initiative to make planning for projects a bit easier by registering projects on a monthly calendar.

There are already dozens of projects registered from September '95 through May '96. If you know of projects that are open to outside participants, please send a message to: proj.register@gsn.org.

Make sure the message includes the following information:

- Month and year project begins.
- How long (approx.) the project will last.
- Name of project.
- E-mail address for contact.
- One or two sentence project description.
- Optional: the URL where participants can find additional information.

STEP 6—CLASSROOM MANAGEMENT

Whether you have one computer plus one modem in your classroom, or several workstations, managing the project will prove to be a challenge. If you are in a single-computer classroom, I recommend that you begin with an e-mail project. All of your partners will be responding to a single e-mail ad-

See WALKING LESSONS, 36

A VISION OF THE IDEAL CURRICULUM UNIT TO PROMOTE HIGH ACADEMIC ACHIEVEMENT

BY DEBORAH E. BURNS

During a recent survey and observation study conducted by the National Research Center on the Gifted and Talented, participating classroom teachers were asked to indicate what practices they employed and how often they used these practices to differentiate the grade level curriculum for students with above average academic achievement. The vast majority of the teachers surveyed indicated that they made infrequent and minor modifications to the grade level curriculum, perhaps because most also indicated that they had no prior training in meeting the needs of gifted learners.

Concurrently, the federal Office of Education Research and Information expressed a strong interest in investigating the effects of applying gifted education instructional strategies to the entire student population. Some gifted education specialists and education reformers have suggested that the use of gifted education techniques, adapted and offered to all students, may promote an increase in academic achievement, a goal that originally fueled the beginning of the education reform movement in 1983. As gifted education teachers join their colleagues in special education, Chapter One, and bilingual education to promote inclusion and services geared to the needs of students within a regular classroom setting, it seems likely that at least some of the traditional gifted education program components will eventually become a recommended part of the regular curriculum.

A RISING TIDE LIFTS ALL SHIPS

At the present time, however, research suggests a discrepancy exists between current instructional practices and the identified need for curriculum revision and modification. Although easy to implement, curriculum compacting is not a prevalent practice in most classrooms. Some teachers report that although they agree with the premises behind curriculum compacting, they find it difficult to make modifications for one group of students and not for others. Other teachers report concerns regarding the supervision of students during curriculum compacting.

To address this discrepancy, staff members at the National Research Center on the Gifted and Talented (NRC G/T) conducted a review of litera-

See VISION, 41

SUCCESSFUL CURRICULUM COMPACTING

BY KAREN L. WESTBERG

Imagine a classroom in which students have the opportunity to "test out" of the regular mathematics and spelling curriculum and are, instead, involved in exciting and meaningful alternative enrichment and acceleration activities. Imagine a teacher who knows how to organize and manage a heterogeneous classroom in which students work at their own pace.

Imagine students who support their peers who, at some times and in some content areas, are progressing faster than they are. Imagine what schooling is like for students who go to school each morning knowing that they will not have to demonstrate the content and skills they already have mastered. Can this be a reality? It is, and I observed it when conducting the Successful Practices Study for The National Research Center on the Gifted and Talented (NRC/GT).

In this article, I will provide an overview of the Successful Practices Study and present the findings from Woodland Elementary School, one of the sites in the study. Specifically, a case study will be provided of a fifth grade teacher's successful use of curriculum compacting in a heterogeneous classroom.

OVERVIEW OF THE SUCCESSFUL PRACTICES STUDY

The Successful Practices Study was conducted to extend information gained from the studies conducted in 1990–1991 by the University of Connecticut site of the NRC/GT. The first year studies included the Classroom Practices Survey Study, which revealed that little instructional and curricular differentiation for bright students was occurring within the majority of regular third and fourth grade classrooms throughout the country (Archambault, F. X., Jr., Westberg, K. L., Brown, S. W., Hallmark, B. W., Emmons, C. L., & Zhang, W., 1993) and the Classroom Practices Observation Study, which corroborated the survey conclusions by finding that the majority of the third and fourth grade classroom activities across five curriculum areas contained no forms of differentiation (Westberg, K. L., Archambault, F. X., Jr., Dobyns, S. M., & Salvin T. J., 1993.)

The Curriculum Compacting Study, also conducted during the first year, was more encouraging because it indicated that teachers who modified the curriculum for high achieving students could eliminate a substantial amount of their regular curriculum without any significant decrease in students' standardized test scores (Reis, S. M., Westberg, K. L., Kulikowich, J., Caillard, F., Hébert, T., Plucker, J., Purcell, J., Rogers, J., & Smist, J., 1993). These studies were the foundation and impetus for the Successful Practices Study which was conducted during the second year of the NRC/GT study.

The overall purpose of the Successful Practices Study was to gather qualitative data to describe the effective practices used for meeting the needs of high ability students in third, fourth, and fifth grade classrooms. Purposive sampling was used to select sites for the study. Regional or state directors of educational agencies and university personnel who had direct involvement with local school districts were asked, "Can you name a school that has a reputation for meeting the individual needs of students and, specifically, the needs of high ability students?" All too often these individuals said that they could not name a single school district, but eventually some school districts were named by at least three sources, and ten sites were selected for the study. Researchers, individuals with advanced training and experience in elementary education, gifted education, and research methodology, were selected to conduct ethnographic case studies at each site (two urban, six rural, and two suburban).

The selected researchers spent several months gathering observational and interview data at their respective sites. The general questions that guided each researcher were: (1) What are the instructional strategies and curricular differentiation techniques used by teachers to meet the needs of individual students in the regular classroom? (2) What factors contribute to classroom teachers' effective use of differentiated teaching strategies? (3) If a gifted program exists, how does it affect the students' need for curricular differentiation and the use of instructional strategies in the classroom? One elementary classroom at each site was selected as the focus, but the researchers conducted several observations and interviewed several individuals in each district to describe what was happening and why it was happening, in a particular classroom.

The researchers compiled case studies describing the results from each site. These ten case studies are chapters in a research monograph on the study (Westberg, K. L., & Archambault, F. X. Jr., in press). The findings from the sites were informative and varied. In some situations, the classroom teachers implemented curriculum modification procedures, employed flexible grouping practices,

provided advanced level content, or provided opportunities for advanced level projects. At some of the sites, the teachers collaborated with other teachers at their grade level or with district curriculum specialists to provide more academic challenge to talented students. In some situations, the teachers and parents described the leadership of school principals or superintendents whom they believed were responsible for teachers' instructional practices, and some of these administrators were also strong advocates the schools' gifted education programs.

BETH WINDSOR, A TEACHER AT WOODLAND ELEMENTARY SCHOOL

As a researcher who gathered data at one of the sites, I had the opportunity to observe Beth Windsor, a teacher at the Woodland Elementary School. Woodland Elementary is located in a suburban community of approximately 35,000 people in the Northeast. It is one of five elementary schools in a school district comprised of nearly 5,000 students. Approximately 70% of its students enter four-year colleges after high school, and the students score well above national averages on standardized achievement tests.

The focus at Woodland Elementary was a fifth grade classroom taught by Beth Windsor. Of the four fifth grade classrooms there, three female teachers work together by departmentalizing their instruction. Namely, one teaches science, one teaches social studies, and the third, Beth Windsor, teaches mathematics to all three classrooms. These three teachers provide instruction in the remaining subjects in their own classrooms. Beth Windsor's classroom is traditional in its appearance and contains the typical desks, tables, and materials. Her class is comprised of 22 students, eight female, 14 male.

Beth Windsor has been teaching elementary age students for 20 years. She received a Bachelor's Degree in elementary education, a Master's Degree in reading, and, at the time of the study, was completing a Specialist's Degree in gifted education. She was pursuing this advanced degree because she believed the training in gifted education would help her be a more effective classroom teacher.

CURRICULAR MODIFICATIONS

Beth Windsor uses various curricular differentiation techniques and instructional strategies to meet the individual needs of students and, in particular, the needs of the high ability students. Among these techniques is a curriculum modification technique entitled curriculum compacting (Renzulli & Smith, 1979; Reis, Burns, & Renzulli, 1992), which Beth uses to modify the spelling curriculum in her homeroom and the mathematics curriculum with the three fifth grade classes she teaches. Beth learned about this technique through the coursework in which she has enrolled for her degree in gifted education.

Beth Windsor set the stage for curriculum compacting on the first day of the school year when she explained to her students how she would use it to provide them with appropriate learning experiences. She was able to do this because of her training and previous experience with curriculum compacting. She used the actual term, curriculum compacting, when explaining the curriculum modification process to her students.

MATH COMPACTING

Mathematics was mentioned within the first few moments upon arriving in Beth's classroom when she explained my presence to her students, and one child blurted out, "I tell everyone our math class is fun." Beth Windsor teaches mathematics for nearly three hours per day because she teaches mathematics to two other fifth grade classes in addition to her homeroom. She uses curriculum compacting in all three classes!

Beth Windsor's procedure for compacting the mathematics curriculum involves, first of all, assessing what the students already know by administering chapter pretests from the Addison-Wesley mathematics series to her students. All students in her classes have the opportunity to take the pretests. Her criterion for mastery of the content and skills in a chapter is 90%. Students who achieve mastery on a pretest become members of the "compacted group" and do not receive instruction or do exercises on the material within that chapter.

The students in the "compacted group" participate in enriched or accelerated alternative activities in mathematics, such as her "average fifth grader" project. For this project, the students, whose mathematics was compacted, obtained several linear measurements of their classmates in centimeters (height, wrist to elbow, waist to ankle, face width, etc.), determined the mean of these measurements, and drew "the average fifth grader" on large butcher block paper to depict the measurements.

While the students in the "compacted group" were working on this project, the rest of the students were not just doing exercises from their mathematics text. On one visit during the time when the "average fifth grader" project was occurring, the rest of the students were doing a measurement activity from a mathematics enrichment book, an activity that was above the fifth grade level. Occasionally she gave the same assignment, brief lesson, or demonstration to the entire class, followed by different practice exercises or activities with the two groups. The student membership

See CASE STUDY, 43

MARCY'S MIND TICKLERS

DO YOU HAVE WHAT IT TAKES TO SOLVE THEM?

HEY KIDS! Here's a Section Just for You

This is the first issue of CAG's quarterly magazine with a section just for kids.

And since games are more fun when more than one person plays, why not ask your parent or teacher to make copies of "Kids' Stuff." Then you can pass them around to your friends or classmates. Some of the puzzles need to be cut out, so the best way to enjoy "Kids' Stuff" is for everybody to have a copy.

Here's what you can look for in future issues: science experiments, places to visit, contests, projects, book reviews, scavenger hunts, and comments from other

Let's suppose that one day you get to school, sit at your desk and suddenly discover that your notebook is missing. As you trace back over your steps, you think aloud, "I'm *almost sure* I had it when I left the house." Then you remember exchanging notes with a friend half way to school—so you definitely *didn't* leave your notebook at home. Where could it be? Then it comes to you! At the corner of the school, you stopped at a bench to tie your shoelaces. You *know* you didn't make any other stops, so your notebook *must* be on the bench.

Without being aware of it, you use logical reasoning and problem solving all the time—we all do. Logic is especially useful when we misplace something.

In this issue of the *Communicator*, Marcy has cooked up some logic puzzles for you to solve. To solve these puzzles, you don't have to have any specific information. All you need is some reasoning to think through the problem and maybe a little patience.

The puzzles are grouped from the easiest to the most difficult. Try them all!

Here are some hints:

- Sometimes the first clue, or even the second clue won't help you at all. Read on. You'll find a place to start.
- Experiment with different solutions. Move the crayons or shapes around until you're satisfied with your answer.
- Some of the puzzles have more than one answer.

You'll find some possible solutions on page 22. ■

Find a Typo, Win a T-shirt

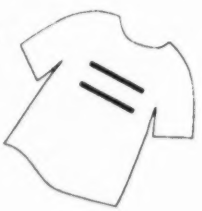
Somewhere on the Kids' Stuff pages is a typo (a spelling error). Tell us where it is and you could be one of ten winners of a CAG T-shirt.

Here's how the contest works:

1. On a sheet of paper, print the word with the typo (correctly spelled, of course).
2. Print your name, address, and phone number.
3. Tell us what size T-shirt to send (adult medium or adult large).

The first 10 entries we receive with the correct answer are winners!

Send your entries to:
CAG's Kids' Stuff
426 Escuela Avenue, Suite 19
Mountain View, CA 94040



MIND TICKLERS from Marcy

1

2

3

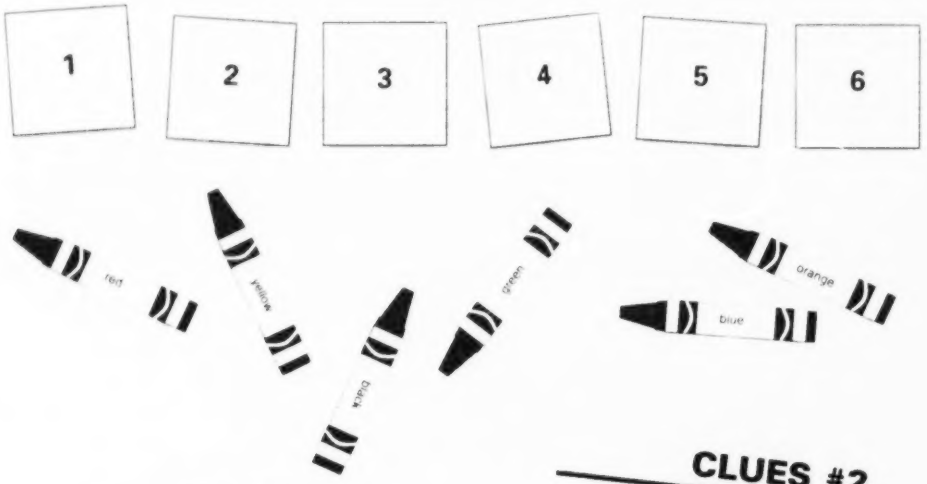
4

5

6

PUZZLE 1

1. Get 6 crayons: blue, red, orange, yellow, green and black.
2. Cut out the 6 number tiles and place them in a row.
3. Read (or have someone else read) the statements in Clues #1.
4. Place the crayon that matches each clue on the correct numbered square.
5. Explain how you solved the puzzle.
6. Do the same for Clues #2.



CLUES #1

A. Black is the sum of 2 and 4.

B. Red is less than orange.

C. Blue is the number of sides on a rectangle.

D. Green is greater than blue.

E. Yellow is an even number.

CLUES #2

A. Red is between two odd numbers.

B. Yellow is the number of sides on a triangle.

C. Green is an even number less than 6.

D. Blue is a number less than orange's number.

E. Black is neither the smallest nor the largest number possible.

BY MARCY COOK

PUZZLE 2

1. Cut out the 6 number tiles and place them in a row.
2. Cut out a triangle, a square, two parallelograms, a hexagon, and a trapezoid.
3. Color one parallelogram red, color the other parallelogram blue.
4. Read the clues.
5. Place the shape that matches each clue on the correct numbered tile.
6. How many different ways can this be done?

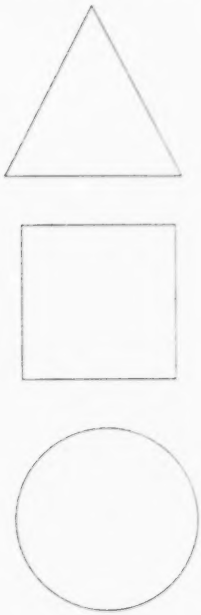
CLUES

A. All even numbers have quadrilaterals.

B. The three shapes which are parallelograms are adjacent to each other.

C. The hexagon is in the first half.

D. The triangle is a smaller number than the trapezoid.



PUZZLE 3

CLUES

A. The polygons are all adjacent to each other.

B. The quadrilaterals are not adjacent to each other.

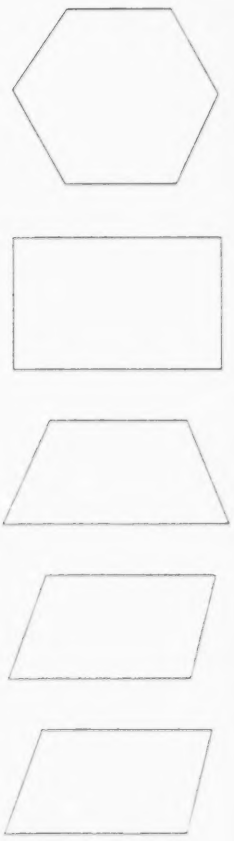
C. The trapezoid number has more than three factors.

D. The hexagon is a prime number.

E. The shapes with 90° angles are not multiples of 2.

F. The rectangle is the square root of a number larger than 11.

1. Cut out the 6 number tiles and place them in a row.
2. Cut out a triangle, a square, a rectangle, a circle, a hexagon, and a trapezoid.
3. Place the shape that matches each clue on the correct numbered tile.
4. Justify your thinking!
5. Do you need all the clues to solve the problem?



MARCY COOK is a math specialist and consultant.

HERE'S A TREASURE OF TEASERS...

If you enjoyed Marcy's puzzles, look for these books that will challenge and stimulate logical thinking. Check out your local bookstore or public library.

Usborne Puzzle Adventure series for adventure stories packed with clues to help you solve the mysteries. More than a dozen titles available, including at least three "seriously difficult puzzles." (Ages 7–12, $4.95 each title)

Mathnet Casebook series are short spin-offs of the Children's Television Workshop productions. Math plays a part in solving the mysteries in these upbeat 50 plus page stories. For example, in "Despair in Monterey Bay" the story uses time zones and calculating the length of an airplane trip. A series of time zone-related questions follow. (Ages 8–12, $4.50)

Math Wizardry for Kids is chockful of math activities from tangrams to calculating how many years you'd have to be in school to do a milllion pages of homework! There's an amazing section relating music and math and how to pick up sound patterns in music and poetry. This is just a fabulous, user friendly resource (Ages 8+++, $13.95) ■

—JODY FICKES SHAPIRO,
Adventures for Kids Bookstore, Ventura, CA

CALLING ALL STUDENTS!

Send us your art, poetry, stories, opinions, and original puzzles. Be sure to tell us your name, age, grade, your school, and the name of your teacher.

MAIL
Write to CAG's Kids' Stuff, 426 Escuela Avenue, Suite 19, Mountain View, CA 94040.

AMERICA ONLINE
Dial up the CAG Office via America Online. Our E-mail address is cbs2000@aol.com.

PHONE or FAX
To reach the CAG office by telephone, call 415.965.0653. To reach us by FAX, dial 415.965.0654.

A NOTE TO OUR ADULT READERS...

If this issue of CAG's quarterly *Communicator* has fallen into the hands of an adult, please share your copy of the "Kids' Stuff" section with your favorite child. If you're a teacher, we hope you'll make copies to use with your classs. Mind ticklers are fun to solve together.

Answers to Marcy's Mind Ticklers

PUZZLE 1

	1	2	3	4	5	6
Clues #1	red	yellow	orange	blue	green	black
Clues #2	1	2	3	4	5	6
	blue	green	yellow	red	black	orange

PUZZLE 2

Here are some possible solutions. You may be able to find some others (at least 12).

1	2	3	4	5	6
triangle	trapezoid	hexagon	blue parallelogram	red parallelogram	square
hexagon	square	blue parallelogram	red parallelogram	triangle	trapezoid

PUZZLE 3

1	2	3	4	5	6
circle	hexagon	square	triangle	rectangle	trapezoid

Why did each shape have to be with it's specific number?
The trapezoid has to be #6 (clue C).
The circle then is #1 (clue A).
The rectangle is #5 (clues E and F).
The square is #3 (clue E and knowledge that #1 and #5 had to be other shapes)
The hexagon is #2 (clue D and knowledge that #3 and #5 had to be other shapes)
The triangle is #4 by elimination.

Were all clues necessary to solve the problem?
Clue B is unnecessary.

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EDUCATIONAL RESOURCES FOR GIFTED STUDENTS AT LOCAL COLLEGES

BY VICKI BORTOLUSSI

An educational asset of collegiate caliber and credit is available to gifted students before they are of college age: California's community colleges. These schools may be one of the largest untapped resources of higher education which can be readily available to gifted students. As a parent of gifted children and as an educator with experience at the secondary and post secondary levels, I can offer a unique and inside perspective of how to take advantage of what community colleges have to offer.

California has 106 comprehensive community colleges throughout the state, making it the largest system of higher education in the world. Every community college professor must now possess a minimum of a master's degree in the discipline in which he or she is teaching, and at least one-third of the faculty hold doctoral degrees. These demanding qualifications carry with them appropriately high salary levels, often higher than those offered at the university.

In addition to the high preparation requirements, the sole focus at a community college is teaching. Therefore, the teaching at these colleges is at a high level of excellence, with students being the first emphasis. Faculty continuously spend time in staff development to improve their teaching ability; they want their students to be successful. Students at community colleges are often extremely well prepared academically in their first two years of a four year degree and can easily complete their baccalaureate degrees and continue on to graduate school.

California passed legislation several years ago which enables high school students to take community college courses at no cost. Permission is needed from the secondary administrator or counselor, and most high schools have these forms which are provided by the colleges. In addition to costing the student nothing, the courses taken may be eligible for credit at both the high school and college.

For example, a student, if he or she is academically ready, can take the freshman English course at the college and receive credit for high school graduation and college at the same time. This opportunity can be extremely important for the gifted student who is not being challenged by the high school curriculum.

The college course compacts into a semester the content of a year's high school course. In addition the college course contains more depth and maturity of subject matter and more opportunities for individualization than is usually found in the high school curriculum, which may be just what the gifted student needs. Also, the variety and age of the community college students, which may include everyone from young students to adults in the working world to retired persons, can provide a fascinating stimulation for the gifted student. Many community college classes are held in the late afternoon and evening, which means that high school students may take advantage of them without disturbing their high school schedules.

In addition to allowing high school students to take regular college classes, other arrangements can be made to serve the needs of gifted students. Since the mission of the community colleges is to serve the community, they often can be responsive to special needs in the community, and community members can approach the college and work together to organize and support programs in the community.

Here is how this worked at Ventura Community College. The local parent group, PAGE (Parents and Advocates for Gifted Education) and the GATE coordinator approached the college office of instruction to see what could be offered for gifted students in the summer. Working with the college's community services division, the parents and the GATE coordinator put together week-long summer classes held at the college and taught by both GATE and college instructors.

"In addition to costing the student nothing, the courses taken may be eligible for credit at both the high school and college."

These classes included newspaper, cooking, music, reading, chemistry, astronomy, calligraphy, art, drama, and preparation for college. The students were 4th through 8th graders, and the cost was paid by the students as arranged through the college's community services in the same way the college offers other special classes for the community. No college credit was given. The college was pleased to work with the parents, who carried most of the responsibility for designing the courses, finding the appropriate instructors, and publicizing it to the students.

In addition to the fun and stimulation these courses provided, the students got their first taste of being "at college." As the years have gone by, many people in our community and their children speak very highly of the summer community college experience they had. The memories were

positive and lasting.

A key to the summer experience was working in partnership with the community college to create a positive experience for the gifted student. The more responsibility the parents can provide, the more receptive the college is apt to be. Parents and the college, working together, can achieve outstanding opportunities for gifted students.

Parents also play a key role in the success of high school students attending the regular community college program. They need to understand that these high school students are taking "regular" college classes, not classes designed for younger students. The content of these classes may be more mature than parents expect for a high school age student, and the discipline and expectations of the professor are just the same for the high school students as for the college students. Gifted students usually take this in stride and flourish in the demanding atmosphere, but parents need to be prepared and ready to let go.

Community colleges are interested in attracting the best and the brightest, and this may need to begin while these gifted students are still in high school or even earlier. Creative partnerships with everyone willing to work together for the best interest of the student can maximize the potential of the gifted student and the untapped resources of the California community college. ■

VICKI BORTOLUSSI, Ph.D is Dean of Career Education at Moorpark College and the parent representative of the Pacific Region to the CAG board. She can be contacted at 805-378-1405 and is committed to developing the community college as a resource for gifted education.

"RUNNING START" IN WASHINGTON

The state of Washington has formalized the high school and community college link with its "Running Start" program. This program, open to all juniors and seniors in high school, enables and encourages those who are interested to attend community colleges and receive both high school and college credit.

A "Running Start" counselor is provided both at the high school and at the college. As in California, college tuition is waived for the high school student. The high school counselor assists the high school student with the program and emphasizes that the high school requirements must be met for high school graduation. This counselor also helps parents and students understand what it means to be attending college, where expectations and requirements are quite different than in the high school. The "Running Start" counselor is an organized college contact for the high school students to help them in the process of adjustment to the college expectations and campus life.

The Washington state "Running Start" program has been very successful for all students. But for the gifted, it can give the student who is ready the opportunity to accelerate at whatever pace he or she is actually capable of. Each year at least one high school student earns both the high school and the community college degree because of the chance to acquire as much education as possible.

In the future, California community colleges may pilot the "Running Start" model or a variation of it. Because California is so vast compared to Washington, which has less than 20 community colleges compared to California's 106, it is more likely that colleges individually will develop such programs. Interested parents, working with the office of instruction at the colleges can help make this happen. Working with a college dean of career education, the position which I currently hold, would be another way to link the college with the high school, since these deans are involved with linking high schools to community colleges through TechPrep, a national model which is federally supported through June 1996. Though this linkage is aimed at all students, especially those who have been previously under-served by traditional college prep programs, there is no reason why this linkage cannot serve the gifted student equally well. ■

—Vicki Bortolussi

COMPACTING FILLS THE VOID LEFT FROM "DUMBING DOWN"

Continued from 1

dents have already mastered most or all of a specified set of learning outcomes, and (3) providing replacement strategies for material already mastered through the use of instructional options that enable a more challenging and productive use of the student's time.

Curriculum compacting might be best thought of as *organized common sense*, because it simply recommends the natural pattern that teachers ordinarily would follow if they were individualizing curriculum for each student. The specific steps for carrying out curriculum compacting in both basic skill and content areas will be described below.

THE BAD NEWS—WHY WE NEED CURRICULUM COMPACTING

It is clear that a major problem facing our schools is the lack of curricular differentiation and academic challenge for many of our most able students. Research also supports this claim. In a recent study dealing with average and above-average readers, Taylor and Frye (1988) found that 78% to 88% of fifth and sixth grade average readers could pass pretests on basal comprehension skills before they were covered in the basal reader. The average readers were performing at approximately 92% accuracy while the better readers were performing at 93% accuracy on the comprehension skills pretests.

One reason that so many average and above average students demonstrate mastery of the curriculum is because contemporary textbooks have been "dumbed down," a phrase used in 1984 by Terrel Bell, former Secretary of Education. Chall and Conard (1991) concur with Bell's assessment, documenting a trend of decreasing difficulty in the most widely used textbooks over a thirty-year period from 1945-1975. "On the whole, the later the copyright dates of the textbooks for the same grade, the easier they were, as measured by indices of readability level, maturity level, difficulty of questions and extent of illustration" (p. 2). Kirst (1982) also believes that textbooks have dropped by two grade levels in difficulty over the last 10–15 years. Most recently, Philip G. Altbach (1991), noted scholar and author on textbooks in America, suggests that textbooks, as evaluated across a spectrum of assessment measures, have declined in rigor.

> Textbooks are a central part of any educational system. They help define the curriculum and can either significantly help or hinder the teacher. The "excellence movement" has directed its attention to textbooks in the past few years. American textbooks, according to the critics, are boring and designed for the lowest common denominator. They have been "dumbed down" so that content is diluted and "readability" is stressed. Textbooks have evolved over the past several decades into "products" often assembled by committees in response to external pressures rather than a coherent approach to education. Most important to many of the critics, textbooks do not provide the knowledge base for American schools in a period of reform, renewal, and improvement. (p. 2).

Researchers have discussed the particular problems encountered by high ability students when textbooks are "dumbed down" because of readability formulas or the politics of textbook adoption. Bernstein (1985) summarized the particular problems that current textbooks pose for high achieving students.

> Even if there were good rules of thumb about the touchy subject of textbook adoption, the issue becomes moot when a school district buys only one textbook, usually "at grade level," for all students in a subject or grade. Such a purchasing policy pressures adoption committees to buy books that the least able students can read. As a result, the needs of more advanced students are sacrificed (p. 465).

Chall and Conard (1991) also cite particular difficulties for the above-average student with regard to less difficult textbooks.

> Another group not adequately served was those who read about two grades or more above the norm. Their reading textbooks, especially, provided little or no challenge, since they were matched to students' grade placement, not their reading levels. Many students were aware of this and said, in their interviews, that they preferred harder books because they learned harder words and ideas from them. Since harder reading textbooks are readily available, one may ask why they were not used with the more able readers, as were the easier reading textbooks for the less able readers. This practice of using grade-level reading textbooks for those who read two or more grades above the norms has changed little through the years, although it has been repeatedly questioned (see Chall, 1967, 1983). It would appear that, for various administrative reasons, teachers do not use a reading textbook above the student's grade placement. The reason most often mentioned is really a question: if the third-grade teacher uses fourth-grade books, what is the fourth-grade teacher going to do? (p. 111)

Further, Chall and Conard stress the importance of the match between a learner's abilities and the difficulty of the instructional task, stating that the optimal match should be slightly above the learner's current level of functioning. When the match is optimal, learning is enhanced. However, "if the match is not optimal (i.e., the

match is below or above the child's level of understanding/knowledge) learning is less efficient and development may be halted" (p. 19). It is clear that the current trend of selecting textbooks which the majority of students can read is a problem for high ability students.

Recent findings by Usiskin (1987) and Flanders (1987) indicate that not only have textbooks decreased in difficulty, but also that they incorporate a large percentage of repetition to facilitate learning. Usiskin argues that even average eighth grade students should study algebra, since only 25% of the pages in typical seventh and eighth grade mathematics texts contain new content. Flanders corroborated this finding by investigating the mathematics textbook series of three popular publishers. Students in grades 2-5 who used these math textbooks encountered approximately 40 to 65% new content over the course of the school year, which equates to new material two to three days a week. By eighth grade, the amount of new content had dropped to 30%, which translates to encountering new material once every one and a half days a week. Flanders (1987) suggests that these estimates are conservative because days for review and testing were not included in his analysis and concludes, "There should be little wonder why good students get bored: they do the same thing year after year" (p. 22).

THE GOOD NEWS— RESEARCH THAT OFFERS A PRACTICAL SOLUTION

A study that was recently completed at the University of Connecticut's National Research Center on the Gifted and Talented (NRC/GT) (Reis, et. al., 1993) examined strategies that teachers use to modify the curriculum so that it accommodates the specific strengths of high ability students. The study further examined the kinds of replacement activities that can be used to provide more appropriate levels of curricular challenge. A sample of 27 school districts and 465 second through sixth grade classroom teachers throughout the country from collaborative school districts that are a part of the NRC/GT were selected for this study.

To participate, districts had to meet two criteria: no previous training or implementation of curriculum compacting, and a willingness to accept random assignment to a treatment group or a control group. Efforts were made to recruit districts with elementary school populations that included economically disadvantaged, limited English proficient, and handicapped students. The districts participating in the study represented a wide range of elementary schools from across the country, ranging from a small rural school in Wyoming to a magnet school in an urban area in California.

Three treatment groups which received escalating levels of staff development were used to examine the most efficient but effective method for training teachers to modify curriculum. Teachers from a fourth set of classrooms served as a control group and therefore received no training. All treatment group teachers received videotape training and a book about the compacting process. Teachers in Treatment Group 2 also received approximately two hours of group compacting simulations conducted by an experienced trainer. The simulations developed by Starko (1986) have been a standard resource in this type of training. Treatment Group 3 received the same training as Group 2, but also had an additional six to ten hours of peer coaching throughout the year, as suggested by Joyce and Showers (1983). Teachers in the control group continued normal teaching practices which did not include the use of curriculum compacting.

Treatment and control group teachers were asked to target one or two candidates in their classrooms for curriculum compacting, using a set of criteria outlined in the material provided by the research team. All targeted students in treatment and control groups were tested before and after treatment with out-of-level- Iowa Tests of Basic Skills (ITBS). Next-grade-level tests were used to compensate for the "topping out" effect that is frequently encountered when measuring the achievement of high ability students.

Although space does not permit a detailed presentation of the descriptive and nonparametric statistical procedures that were used to analyze data from this study, a summary of important findings will be described, and the interested reader is invited to consult a comprehensive technical report that is available from The NRC/GT (Reis, et al., 1992).

How To Get More For Less! The most important finding might best be described as the more-for-less phenomenon! Approximately 40 to 50% of traditional classroom material was compacted for targeted students in one or more content areas. When teachers eliminated as much as 50% of regular curricular activities and materials for targeted students, no differences were observed in post test achievement scores between treatment and control groups in math concepts, math computation, social studies, and spelling. In science, the students who had between 40 to 50% of their curriculum eliminated actually scored significantly higher on science achievement post tests than their peers in the control group. And students in Group 1 whose curriculum was specifically compacted in mathematics scored significantly higher than their peers in the control group on the math concepts post test. These findings clearly point out the benefits of curriculum compacting so far as standard achievement is

concerned. Analyses of data related to replacement activities as indicated that students viewed these activities as much more challenging than standard material.

Additional findings are based on an examination of the efficiency and effectiveness of the compacting process and the various training paradigms provided to the three treatment groups. Ninety-five percent of the teachers in the study were able to identify high ability students in their classrooms and to document individual student strengths. Eighty percent of the teachers were able to document the curriculum that high ability students had yet to master, list appropriate instructional strategies for students to demonstrate mastery, and document an appropriate mastery standard. The most frequently compacted subject was mathematics, followed by reading, language arts, science, and social studies.

Replacement strategies consisted of three categories of activities for students: enrichment, acceleration, and other, which included activities such as peer tutoring, cooperative learning, correcting papers, and other teacher assistance tasks. Ninety-five percent of teachers used enrichment as a replacement strategy and 18% also used acceleration. Many more teachers indicated they would have elected to use acceleration more frequently, but were prevented from doing so because of district policies that prohibit students from working in textbooks beyond their present grade level. Although the majority of replacement strategies reflected student interests, needs, and preferences, replacement strategies often did not reflect the types of advanced content that would be appropriate for high ability students. This finding indicates that additional staff development is necessary, especially as it relates to appropriately challenging replacement strategies. This finding was confirmed through anecdotal records, which indicated that teachers would like more access to consultant assistance from enrichment or gifted education specialists, and more training and assistance in locating and using appropriate enrichment materials.

Teachers in Treatment Group 3 used significantly more replacement strategies than did teachers in Groups 1 and 2. A significant difference in favor of Group 3 was also found with regard to the overall quality of curriculum compacting. A very encouraging finding was that a majority of teachers in all treatment groups said they would like to gain more skills in using the compacting process and the broader range of materials that could be used for replacement activities.

HOW TO USE THE COMPACTING PROCESS

Defining Goals and Outcomes. The first of three phases of the compacting process consists of defining the goals and outcomes of a given unit or segment of instruction. This information is readily available in most subjects because specific goals and outcomes usually can be found in teachers' manuals, curriculum guides, scope-and-sequence charts, and some of the new curricular frameworks that are emerging in connection with outcome based education models. Teachers should examine these objectives to determine which objectives represent the acquisition of new content or thinking skills as opposed to reviews or practice of material that has previously been taught. The scope and sequence charts prepared by publishers, or a simple comparison of the table of contents of a basal series will provide a quick overview of new versus repeated material.

A major goal of this phase of the compacting process is to help teachers make individual programming decisions; a larger professional development goal is to help teachers be better analysts of the material they are teaching and better consumers of textbooks and prescribed curricular material.

Identifying Candidates for Compacting. The second phase of curriculum compacting is identifying students who have already mastered the objectives or outcomes of a unit or segment of instruction that is about to be taught. This first step of this phase consists of estimating which students have the potential to master new material at a faster than normal pace. Knowing one's students is, of course, the best way to begin the assessment process. Scores on previous tests, completed assignments, and classroom participation are the best ways of identifying highly likely candidates for compacting. Standardized achievement tests can serve as a good general screen for this step because they allow us to list the names of all students who are scoring one or more years above grade level in particular subject areas.

Being a candidate for compacting does not necessarily mean that a student knows the material under consideration. Therefore, the second step of identifying candidates consists of finding or developing appropriate tests or other assessment techniques that can be used to evaluate specific learning outcomes. Unit pretests, or end-of-unit tests that can be administered as pretests are ready made for this task, especially when it comes to the assessment of basic skills. An analysis of pretest results enables the teacher to document proficiency in specific skills and to select instructional activities or practice material necessary to bring the student up to a high level on any skill that may need some additional reinforcement.

The process is slightly modified for compacting content areas that are not as easily assessed as basic skills, and for students who have not mastered the material but are judged to be candidates for more

rapid coverage. First, students would have a thorough understanding of the goals and procedures of compacting, including the nature of the replacement process. A given segment of material should be discussed with the student (e.g., a unit that includes a series of chapters in a social studies text), and the procedures for verifying mastery at a high level should be specified. These procedures might consist of answering questions based on the chapters, writing an essay, or taking the standard end-of-unit test. The amount of time for completion of the unit should be specified, and procedures such as periodic progress reports or log entries for teacher review should be agreed upon. And, of course, an examination of potential acceleration and/or enrichment replacement activities should be a part of this discussion.

Another alternative is to assess or pretest all students in a class when a new unit or topic is introduced. Although this may seem like more work for the teacher, it provides the opportunity for all students to demonstrate their strengths or previous mastery in a given area. Using a matrix of learning objectives, teachers can fill in test results and establish small, flexible, and temporary groups for skill instruction and replacement activities.

Providing Acceleration and Enrichment Option. The final phase of the compacting process can be one of the most exciting aspects of teaching because it is based on cooperative decision making and creativity on the parts of both teachers and students. Efforts can be made to gather enrichment materials from classroom teachers, librarians, media specialists, and content area or gifted education specialists. These materials may include self-directed learning activities, instructional materials that focus on particular thinking skills, and a variety of individual and group project oriented activities that are designed to promote hands-on research and investigative skills.

The time made available through compacting provides opportunities for exciting learning experiences such as small group, special topic seminars that might be directed by students or community resource persons, community based apprenticeships or opportunities to work with a mentor, peer tutoring situations, involvement in community service activities, and opportunities to rotate through a series of self-selected mini-courses.

The time saved through curriculum compacting can be used by the teacher to provide a variety of enrichment or acceleration opportunities for the student which are listed in the third column of the curriculum compactor. Enrichment strategies might include: self-selected independent investigations, mini-courses, advanced content, mentorships, and alternative reading assignments. Acceleration might include the use of material from the next unit or chapter, the use of the next chronological grade level textbook or the completion of even more advanced work. Alternative activities listed in the third column of the compactor should reflect an appropriate level of challenge and rigor that is commensurate with the student's abilities and interests.

Decisions about which replacement activities to use are always guided by factors such as time, space, and the availability of resource persons and materials. Although practical concerns must be considered, the ultimate criteria for replacement activities should be the degree to which they increase academic challenge and the extent to which they meet individual needs.

Great care should be taken to select activities and experiences that represent individual strengths and interests rather than the assignment of more-of-the-same worksheets or randomly selected kits, games, and puzzles! This aspect of the compacting process should also be viewed as a creative opportunity for an entire faculty to work cooperatively to organize and institute a broad array of enrichment experiences.

A favorite mini-course that a faculty member has always wanted to teach or serving as a mentor to one or two students who are extremely invested in a teacher's beloved topic are just a few of the ways that replacement activities can add excitement to the teachers' part in this process as well as the obvious benefits for students.

We have also observed another interesting occurrence that has resulted from the availability of curriculum compacting. When some previously bright but underachieving students realized that they could both economize on regularly assigned material and "earn time" to pursue self-selected interests, their motivation to complete regular assignments increased. As one student put it, "Everyone understands a good idea!"

The best way to get an overview of the curriculum compacting process is to examine an actual example of how the management form that guides this process is used. A completed example of this form, entitled "The Compactor" is presented on page 31. The form is both an organizational and record keeping tool. Teachers should fill out one form per student or one form for a group of students with similar curricular strengths. Completed Compactors should be kept in students' academic files and updated on a regular basis. The form can also be used for small groups of students who are working at approximately the same level (e.g., a reading or math group). The Compactor is divided into three sections:

- **Column One.** Include information on learning objectives and student strengths in those areas. Teachers should list the objec-

tives for a particular unit of study, followed by data on students' proficiency in those objectives, including test scores, behavioral profiles, and past academic records.

- **Column Two.** Detail the pretest vehicles they select, along with test results. The pretest instruments can be formal measures, such as pencil and paper tests, or informal measures, such as performance assessments based on observations of class participation and written assignments.

Specificity is extremely important. Recording an overall score of 85% on ten objectives, for example, sheds little light on what portion of the material can be compacted, since students might show limited mastery of some objectives and high levels of mastery on others.

- **Column Three.** Record information about acceleration or enrichment options. In determining these options, teachers must be fully aware of students' individual interests and learning styles. We should never replace compacted regular curriculum work with harder, more advanced material that is is solely determined by the teacher. Instead, students' interests should be taken into account. If for example, a student loves working on science fair projects, that option may be used to replace material that has been compacted from the regular curriculum. We should also be careful to help monitor the challenge level of the material that is being substituted. We want students to understand

INDIVIDUAL EDUCATIONAL PROGRAMMING GUIDE
The Compactor

Prepared by Joseph S. Renzulli
Linda M. Smith

NAME: Rosa AGE: 10 TEACHER(S): _____ Individual Conference Dates and Persons Participating in Planning of IEP

SCHOOL: _____ GRADE: 5 PARENT(S): _____ _____ _____ _____ _____

Curriculum Areas to be Considered for Compacting Provide a brief description of basic material to be covered during this marking period and the assessment information or evidence that suggests the need for compacting.	Procedures for Compacting Basic Material Describe activities that will be used to guarantee proficiency in basic curricular areas.	Acceleration and/or Enrichment Activities Describe activities that will be used to provide advanced level learning experiences in each area of the regular curriculum.
English Unit on adjectives (identification, proper adjectives, comparing adjectives) Unit on nouns (proper, common, possessive plurals, identification) Unit on capital letters	Teacher-made tests in all areas described. *Continental Press* dittos used as test. Will work on individual tests on articles (a, an, the) and possessive adjectives.	Start a school newspaper to be published once a month. (Alternative Projects) Rosa will edit the Geography and Travel section of the school newspaper. Rosa will also write a monthly column.
Math Unit on fractions (adding, subtracting, multiplying, dividing)	Teacher-made tests. Unit 7 test *Macmillan Mathematics 5*. Math curriculum post-tests.	Will be able to move to multiply8ng and dividing since mastery was shown in other areas. Acceleration.
Spelling Words in *Economy Press Kit on Individualizing Spelling*—one week. Next week—works with teacher in directed activities from *Harper/Row Basic Speller 5*	Is on highest level in spelling kit. Daily work. Teacher-made tests where she shows knowledge of spelling rules.	School newspaper (see above) · independent study project.
Social Studies U.S. Geography · Geography and the history of New England	Teacher-made tests to show basic understanding of geography, production, colonial history	Individual Project: Science fair project—browing plants under various conditions.

☐ Check here if additional information is recorded on the reverse side.

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ROSA: A SAMPLE COMPACTOR FORM

Rosa is a fifth-grader in a self-contained heterogeneous classroom. Her school is located in a lower socioeconomic urban school district. While Rosa's reading and language scores range between four or five years above grade level, most of her 29 classmates are reading one to two years below grade level. This presented Rosa's teacher with a common problem: What was the best way to instruct Rosa? He agreed to compact her curriculum. Taking the easiest approach possible, he administered all of the appropriate unit tests for the grade level in the Basal Language Arts program and excused Rosa from completing the activities and worksheets in the units where she showed proficiency (80% and above). When Rosa missed one or two questions, the teacher checked for trends in those items and provided instruction and practice materials to ensure concept mastery.

Rosa usually took part in language arts lessons one or two days a week. The balance of the time she spent with alternative projects, some of which she selected. This strategy spared Rosa up to six or eight hours a week with language arts skills that were simply beneath her level. She joined the class instruction only when her pretests indicated she had not fully acquired the skills or to take part in a discussion that her teacher thought she would enjoy. In the time saved through compacting, Rosa engaged in a number of enrichment activities. First, she spent as many as five hours a week in a resource room for high ability students. This time was usually scheduled during her language arts class, benefiting both Rosa and her teacher, since he didn't have to search for all of the enrichment options himself. The best part of the process for Rosa was that she didn't have make-up regular class assignments because she was not missing essential work.

Rosa also visited a regional science center with other students who had expressed a high interest and aptitude for science. Science was a second strength area for Rosa, and based on the results of her Interest-A-Lyzer, a decision was made for Rosa to proceed with a science fair project on growing plants under various conditions. Rosa's Compactor, which covered an entire semester, was updated in January. Her teacher remarked that compacting her curriculum had actually saved him time—time he would have spent correcting papers needlessly assigned! The value of compacting for Rosa convinced him that he should continue the process. The Compactor was also used as a vehicle for explaining to Rosa's parents how specific modifications were being made to accommodate her advanced language arts achievement level and her interest in science. A copy of the Compactor was also passed on to Rosa's sixth grade teacher, and a conference between the fifth and sixth grade teachers and the resource teacher helped to insure continuity in dealing with Rosa's special needs. ■

—Sally M. Reis

the nature of effort and challenge, and we should ensure that students are not simply replacing the compacted material with simple reading or work that is not advanced.

SUMMARY

Curriculum compacting takes time and energy on the part of both teachers and students. Yet, over the years, we've discovered that it saves teachers precious hours, once they're familiar with the process. Most educators who now compact effectively say that it takes no longer than normal teaching practices. More importantly, they tell us that the benefits to all students certainly make the effort worth while. One teacher's evaluative comments about the compacting process reflects the attitude of most teachers who participated in our research. "As soon as I saw how enthusiastic and receptive my students were about the compacting process, I began to become more committed to implementing this method in all my classes." Teachers also overwhelmingly indicated that although they had been asked to target one or two students for this study, they were able to use the compacting process with a much broader segment of their students. Many teachers in the study said that as the school year progressed, they had extended compacting to as many as eight or ten students in their classes.

The many changes that are taking place in our schools require all educators to examine a broad range of techniques for providing equitably for all students. curriculum compacting is one such process. It is not tied to a specific content area or grade level, nor is it aligned with a particular approach to school or curricular reform. Rather, the process is adaptable to any school configuration or curricular framework, and it is flexible enough to be used within the context of rapidly changing approaches to general education. The research study described in the sidebar and practical experience gained through several years of field testing and refining the compacting process have demonstrated that many positive benefits can result from this process for both students and teachers. ■

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A list of references for this article can be obtained from the *Communicator* editor.

RESOURCES READY? NOW START COMPACTING

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It is important to note that a key feature in this process is allowing students some freedom to make choices about the enrichment topic and the methods through which the topic is explored. Independent research projects, mentoring by a professional in the field, and classroom interest centers can all play a part in this learning experience.

It is vital to have a list of math resources beyond the immediate grade level to help design a rich, stimulating program. The NCTM's Addenda Series to the Standards and its monthly journal publications are excellent places to start. Collaborating with the teacher in the next classroom, seeking assistance from the district mathematics coordinator, and contacting state math consultants are good ways to begin networking to find additional enrichment materials that have been used successfully.

Attending local, regional, and national NCTM conferences will not only broaden teachers' lists of references, but also the workshop presentations and keynote speakers will most definitely spark teacher creativity and enthusiasm in designing enrichment programs. The resources are out there; teachers just need to start digging and, above all, sharing with one another. A list of publishers of mathematics enrichment materials is included at the end of this article as a starting point upon which to build.

Although "smaller is better" is a common theme when venturing into untried waters, compacting in math can also be approached from a totally different angle, that is by starting out with the entire class. If the pretest from chapter one is given to all students, the results may show that almost everyone can be compacted out of the initial review. Then, the class can move ahead to new material with only a few students working on some targeted weak areas. And what an incentive the compacting process is! Students can't wait to move ahead to new material and they appreciate the fact that they will not be stuck reviewing over and over again concepts they already know.

A SAMPLE MATH UNIT

Once success has been achieved with these two compacting strategies, i.e., compacting the majority of the class on basic skills and selecting a few students to compact on a given topic, teachers are ready to move to the most creative and challenging part of the whole process—a fully compacted unit that will bring their level of math instruction to new heights!

The following is a sample unit on area developed for a heterogeneous class. To introduce the chapter and provide a preassessment opportunity for the teacher, the following problem situation is presented to the entire class. They will discuss this in groups and then report their findings to the class.

Problem:
The Board of Education is considering providing funds to carpet classrooms. Our class has been asked to determine how much carpeting will be needed for our room and to select the best buy from a number of store samples. Where do we begin? What do we need to know?

The teacher uses this activity to observe students, listen to their conversations, and get a feel for their understanding of the concepts associated with area. Following this activity, the pretest or posttest from the unit on area is administered to determine the mastery level of each student. The teacher then develops instructional groups and places students in these groups according to their level of mastery. A sample of activities pursued by four groups differentiated by their levels of expertise might include the following:

1) Students who will benefit from the entire unit of instruction might begin the unit by exploring the meaning of area using geoboards;
2) Students who already understand the definition of area might start by discovering the relationships between the area of common quadrilaterals such as squares, rectangles, parallelograms, and trapezoids;
3) Students who have mastered the concepts in 1 and 2 above might begin this unit by investigating the area of circles, semicircles, and pie-shaped wedges;
4) Finally, the most advanced students might use this unit to ex-

JENNIFER EBERT
Grade 12
Elk Grove High School

amine the area of irregular shapes such as odd-shaped real estate plots.

REPLACEMENT ACTIVITIES

With the extra time provided by eliminating repetitive and previously mastered curriculum for students, enrichment activities are provided in the form of interest development centers and individual or small group projects. Some examples of interest development centers for this unit might include:

- **A Manipulatives Center** where students explore tangram, pattern block, and geoboard activities with area;
- **An Arts and Architecture Center** where students create scale drawings of their dream bedrooms or analyze the latest spring fashion designs from a geometric perspective;
- **A Geometry in Nature Center** where students study the honeycomb as a combination of tessellating hexagons or interpret the relationship of Fibonacci numbers to the spirals on a sunflower or pine cone.

Some of the activities in the interest development centers may spark motivation for students to pursue an independent project of their choice and creation. Some independent investigations that might arise from the centers listed above could include:

- Spending a day with a local architect, researching the tools of her trade, and then designing a new tool that would be useful to architects and promoting it in writing to the U.S. Patent Office;
- Evaluating the design of the school building to determine its functional utility and making an oral presentation to the Board of Education with recommendations on improvements;
- Investigating M.C. Escher's use of tessellations to create optical illusions and designing a poster with an original tessellating pattern that produces an illusion.

Once teachers and students have experienced the compacting process, they are sold on it! It not only makes sense, but is motivational as well. Compacting actively engages the student and teacher in creating curriculum, a curriculum that is personal, relevant, and interesting. After all, isn't that what education is all about? ■

M. KATHERINE GAVIN is a doctoral candidate at the University of Connecticut.

PUBLISHERS OF ENRICHMENT MATERIALS

Marcy Cook
P.O. Box 5840
Balboa Island, CA 92662

Creative Publications
5040 West 111th Street
Oak Lawn, IL 60453

Cuisenaire Company of America, Inc.
P.O. Box 5026
White Plains, NY 10602-5026

Dale Seymour Publications
P.O. Box 10888
Palo Alto, CA 94303-0879

Lawrence Hall of Science
University of California
Berkeley, CA 94720

National Council of Teachers of Mathematics
1906 Association Drive
Reston, VA 22091-1593

Sunburst Communications/Wings for Learning
1600 Green Hills Road
P.O. Box 660002
Scotts Valley, CA 95067-0002

Teachers' Laboratory Catalog
P.O. Box 6480
Brattleboro, VT 05302-6480

TERC
2067 Massachusetts Avenue
Cambridge, MA 02140

Tom Snyder Productions
80 Coolidge Hill Road
Watertown, MA 02172-2817

—M. Katherine Gavin

Her Kitchen

The light from the kitchen
flickering on and off.
My mother's shadow dancing playfully on the wall.
She is at the helm of the oven,
which is grumbling and hissing,
dispensing smells beyond imagination.
She battles fiercely with knives and spatulas,
pots and pans, salt and pepper.
I want to offer assistance,
but she pushes me away,
for she knows she's the only captain.

—James Eder
Grade 10
Point Loma High, San Diego

Remedial Rx for Underachievement Falls Short

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Likewise, educational intervention strategies to date have not enjoyed widespread success in reversing underachievement (Emerick, 1992).

Several explanations have been offered for lack of widespread success in reversing the underachievement pattern. For instance, Passow and Goldberg (1958) argued that one common intervention is unrealistic because no one common cause for underachievement exists. Interventions should then be individually designed to address the unique situation of the underachiever. Complementing these concerns is the hypothesis that the most typically used approaches focus on the negative behaviors of these students. Some of these efforts include enrolling underachieving students in study skills courses (Crittenden, Kaplan & Helm, 1984; Hastings, 1982; Scruggs & Cohn, 1983), providing full-time special classes (Whitmore, 1980; Butler-Por, 1987) or using behavior management techniques (Rimm, 1986).

The "learn-how-to-get-organized-and-you-will-achieve" or "work-hard-and-you-will-be-rewarded" philosophy implies that underachieving students consciously want to improve and are willing to work hard and become self-disciplined in order to reverse their pattern of underachievement. According to Kaufman (1991), this is not the usual case. She defines these learners as discouraged and argues that they need encouragement, not discipline or more time on task, to overcome their problem.

The few studies that have examined various curricular approaches that are effective with gifted underachievers have several points in common. Unlike the remedial approaches mentioned above, the successful approaches tend to be child-centered, accentuate student strengths, and value student interests. These approaches stress the process of learning as well as the final product. Learning is seen as an active process in which students choose to learn instead of passively taking notes and taking tests.

Several of these studies report that when underachieving students complete a meaningful project, positive gains in self-esteem, academic self-efficacy, and overall motivation have been noted (Baum, Emerick, Herman & Dixon, 1989; Emerick, 1992; Whitmore, 1980). Likewise, research on gifted and talented students, in general, has indicated that the highest levels of student productivity often result when students are engaged in self-selected investigations. In other words, allowing students to pursue topics of strong and sometimes even passionate interest often results in high levels of achievement.

HOW WOULD CURRICULUM COMPACTING HELP STUDENTS LIKE JOSH AND TYRELL?

Both Josh and Tyrell had academic strengths and passionate interests. Josh was a song writer, musician, and linguist, while Tyrell was an inventor and engineer. These students would have benefited greatly from curriculum compacting. Rather than be enrolled in high school coursework which they had previously mastered, both young men could have pursued their interests under the guidance of a teacher or a mentor in their high school community. Both young men would have benefited from acceleration and independent study.

Rather than undergo skill lessons in foreign languages, Josh could have combined his love of music with his knowledge of foreign languages and pursued an investigation of contemporary music from Italy, Spain, and France. Rather than sleep through lessons in geometry, Tyrell could have tested out of geometry and enrolled at a nearby college for an accelerated level college course. Tyrell might also have become involved in design projects supervised by an industrial arts teacher in his high school.

Had Josh and Tyrell been provided a compacted curriculum plan, their educational programs would have allowed them to be actively involved in designing their own learning experiences—those which accentuated their strengths and were based on their interests.

Josh admitted he was "playing the game" while Tyrell confessed that he simply slept during class. Bright students like Josh and Tyrell become "systematically demotivated" (Feldhusen, 1989, p. 58) because our schools have failed to provide them with a challenging curriculum. Gifted underachievers grow to dislike learning simply because their academic curriculum does not meet their ability level.

At the very least, the lack of strategies such as curriculum compacting can promote "game playing" by bright students who have come to believe that the best way to succeed in school is to do exactly what the teacher asks: nothing less and nothing more.

Teachers must ensure that bright students like Josh and Tyrell do more than simply mark their time in the classroom. In order to promote a love of learning and independent study habits, a drastic change in the academic preparation of high ability students is required. To meet all of the learning needs of our gifted students, we must provide an appropriate content curriculum as well as an opportunity for a student to explore interests and develop self-directed learning habits. If being gifted means that a young person knows more or learns faster than peers, it is apparent

that procedures for implementing compacting are vital to insure a challenging curriculum for our brightest students.

FINDING CHALLENGING OPTIONS

The most creative and challenging part of a teacher's role in curriculum compacting is to design alternatives for students whose curriculum has been modified. If high ability students have been successful in mastering the regular curriculum efficiently, then they need to be provided some time to pursue advanced-level studies. Teachers have test scores on students—the concrete evidence they need to guarantee that basic material has been mastered. Many alternatives then need to be considered for meeting the individual needs of students whose curriculum has been compacted. Possibilities discussed by both teachers and researchers include the following; differentiated curriculum through higher level content, assignment of more challenging written work or reading material, independent or small group work on self-selected interests, mentorships and internships, or the use of contracts or management plans to facilitate independent study (Reis, Burns & Renzulli, 1992).

Deciding which of these techniques will provide the best alternatives for individual students or groups of students will depend on a variety of factors such as space, time, availability of resources, availability of a gifted program, and local district policies. Though practical and organizational concerns may place restrictions on enrichment alternatives, the crucial consideration should be both the academic challenge level of the material to be substituted and the interests of the student.

OUR CHALLENGE AS EDUCATORS

Imagine what it might be like to spend hour after hour completing exercises and activities that you have known for years. Adults would never tolerate the type of repetitiveness that many of our brightest students face daily. Often, these youngsters find everything they encounter in school so easy that they never really learn how to work; they learn to expend minimum effort and never experience the joy of successfully tackling a real academic challenge.

Students like Josh and Tyrell remind us how bright students may often underachieve because of the unchallenging educational programs we provide. We now owe it to them to remedy this situation by initiating the curriculum compacting process, increasing the challenge level of the work students are expected to complete, and providing worthwhile enrichment experiences commensurate with their abilities. The challenge is ours to meet. ■

Dr. Thomas Hébert is a faculty member at the University of Alabama.

WALKING LESSONS

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dress. Your students can be divided into groups according to specific tasks or according to the geographic location of your partners.

When partners are scattered around the continent or globe, you might assign a group of students to two or three partners. I have found this strategy to be particularly effective in developing a sense of community. Each group corresponds with their partners and reports findings to the class.

If you are fortunate enough to have regular access to several computers, it becomes more feasible to encourage students to participate in online research projects. Management issues can be addressed by generating a timeline to keep students focused—it's very easy to get distracted on the Internet!

- Project topic
- Description of what the student wants to learn (usually in the form of three questions)
- List of Internet locations checked with an evaluation of the usefulness of these sites
- Summary of information gathered
- Draft of report in storyboard if it is to be presented in multimedia format
- Final text or multimedia report

STEP 7—ASSESSMENT: HOW DO WE KNOW IT WORKS?

Assessment provides us with perspective, and can be undertaken at several levels. Student mastery of the content can be measured through performance as well as by objective tests. Student work through the process can be evaluated by observation, and by self- and peer-assessment questionnaires.

STEP 8—DON'T TRAVEL ALONE

Remember the buddy system. Using technology and telecommunications can be risky. It is a lot of work, so get all the support you can. It is best to enlist the support of your site administrator. Having parents "in the know" will prove to be a great benefit. My experience has been that parents are usually excited to learn that their children are collaborating with students from across the nation. Share your project with a trusted colleague or two so you can get input and feedback. If you follow these eight steps, you can navigate this new world fairly well so that you and your students will enjoy the benefits we know are possible.

GOOD LUCK—HAVE A SAFE TRIP! I hope to see you online. ■

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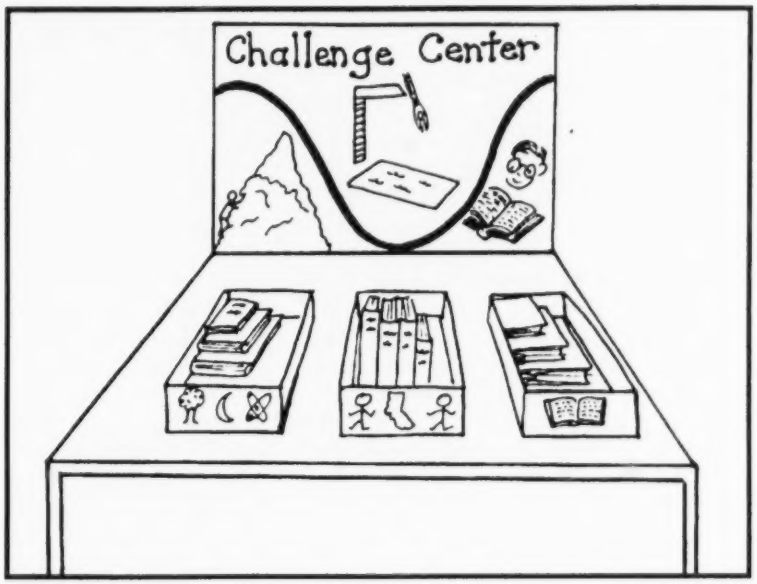

A Differentiated Learning Center

BY SANDRA N. KAPLAN, ILLUSTRATIONS BY VICTORIA STEINITZ

Placing a learning center in the classroom is one way to provide gifted students with consistent opportunities for challenge by differentiating the core curriculum.

WHY LEARNING CENTERS?

Teachers can use a learning center to extend the topic under study or to replace material or concepts students have previously mastered or already understand with differentiated experiences.

Elements such as defining details, identifying big ideas, specifying unanswered questions and describing trends are ways to probe deeper or obtain depth of understanding in any topic.

The learning center is a designated site in the classroom. It focuses on a topic of study and includes:

- A set of task cards that describe what students are to do
- Resources students can use to research the topic
- Materials needed to complete the task

SETTING UP A LEARNING CENTER

1. Designate space for the learning center to display and make accessible the task cards, references and materials.
   - Use a table placed under an empty bulletin board, the panels of a folding screen or the sides of a large box as the display area for the learning center.
2. Prepare the task cards (see pages 39 and 40).
   - Photocopy the task cards. Mount them or copy them directly onto card stock. (Hint: Enlarge each task card to 8 1/2" x 11" and have them laminated.)
3. Display task cards in the learning center.
   - Note that the task cards do not refer to a specific topic or area of study, so you can define the topic of study for a student or the student can select his or her own topic of study based on individual needs and/or interests.
4. Label folders "Completed Work" and "Uncompleted Work." Place these at the center.

INTRODUCING THE LEARNING CENTER

1. Introduce the learning center to the class by discussing each task card: directions, application of the task to a topic or area of study, vocabulary, references, etc.
2. Show students how to use the graphic organizer with the topic or material they are studying.

(See Graphic Organizer Samples.) Students can draw their own enlarged version of the graphic organizer on a separate piece of paper or you can draw and duplicate multiple copies of the graphic organizer for students to use at the learning center.

2. Prepare a record-keeping sheet for students to write down their name, date, accomplishments and needs. A separate entry should be made to the log each time a student works at the learning center.
3. Role play how to effectively and efficiently use the learning center and discuss potential problems such as need for assistance when working independently, what to do if students run out of materials needed to complete the task, etc. Describe problem-solving strategies and appropriate independent and cooperative behaviors expected of students working at the learning center

USING THE LEARNING CENTER

1. Schedule time for students to work at the learning center. Students can be assigned to the center at a particular period of a day or week. They can be rotated into the learning center according to a schedule, or students can self-select to work at the center according to predetermined teacher and class guidelines. In *no* case should the learning center be used as a reward or punishment for learners.
2. Discuss when and how work at the learning center will be assessed.
3. Plan a time for students to share their learning center work with the class. ■

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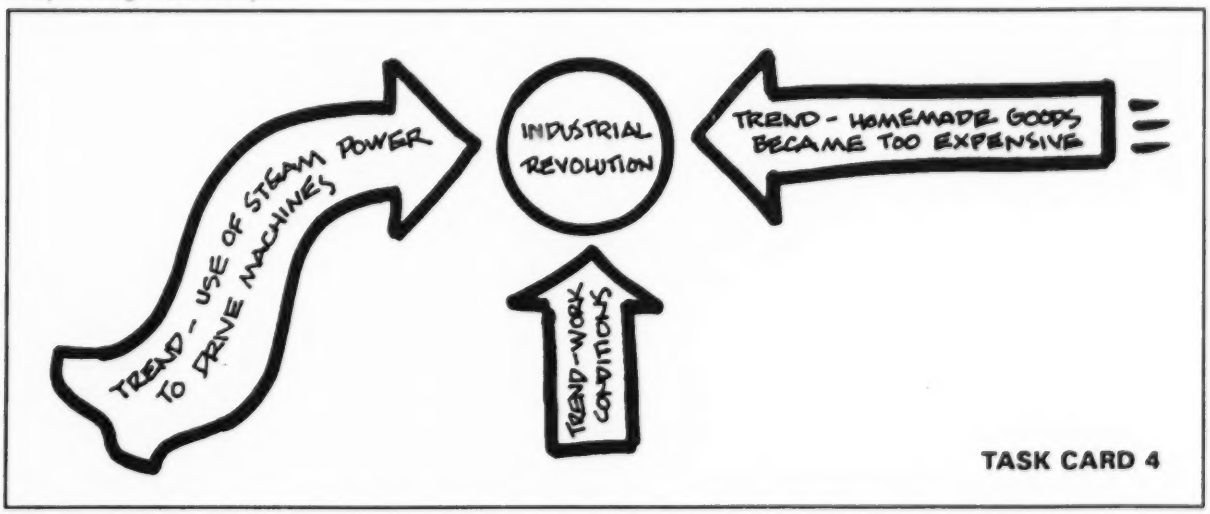
VICTORIA STENITZ is the Gifted-Bilingual Magnet Coordinator at Euclid Avenue School, Los Angeles USD.

Graphic Organizer Sample

CHANGE CAN BE A CONSEQUENCE OF EVOLUTION AND REVOLUTION.
EVIDENCE - WESTERN TOWNS GREW TO SUPPLY THE DEMANDS OF PEOPLE (EVOLUTION)
EVIDENCE - INVENTION OF MACHINES CHANGED THE ECONOMY (REVOLUTION)
TASK CARD 2

Graphic Organizer Sample

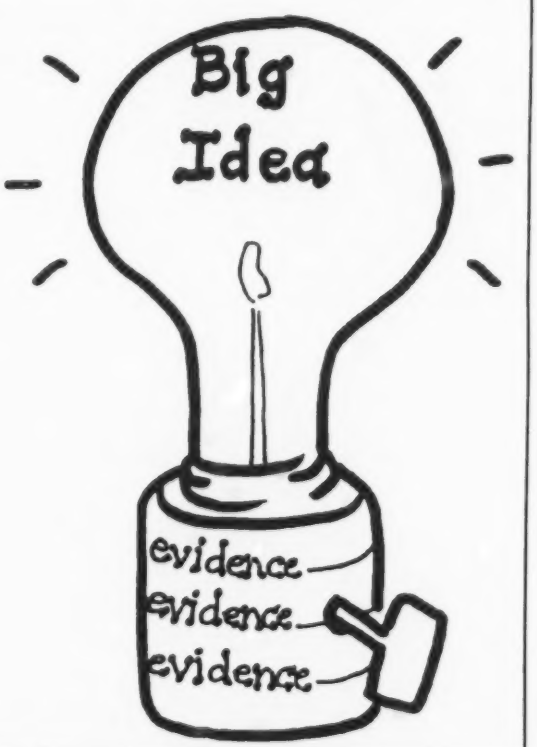

TREND - USE OF STEAM POWER TO DRIVE MACHINES
INDUSTRIAL REVOLUTION
TREND - HOMEMADE GOODS BECAME TOO EXPENSIVE
TREND - WORK CONDITIONS
TASK CARD 4

Select an area to study.

Identify the details about the area you are studying.

TASK CARD 1

Select an area of study. Define a Big Idea related to the study. Support the Big Idea with evidence.



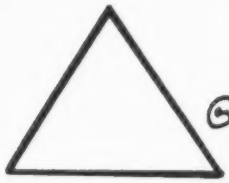
TASK CARD 2

Select an area of

Identify the unanswered ???
about this area of study.

Categorize the unanswered ???
Label the groups.

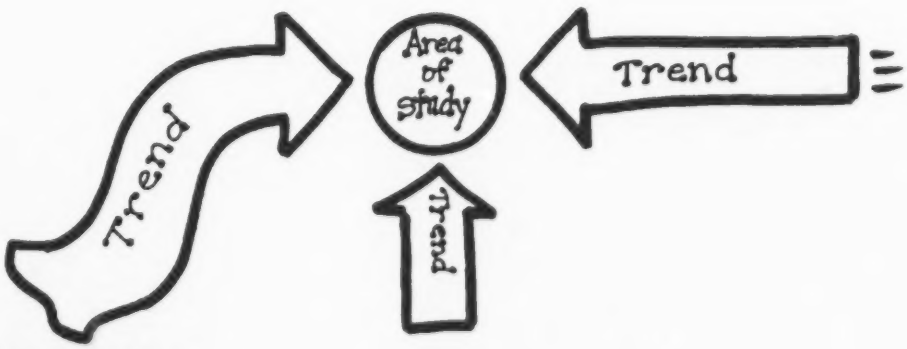
Group ___

 Group ___

TASK CARD 3

Select an area of

Name and describe the trends
that influence this area of study.



TASK CARD 4

VISION

continued from 18

ture to identify additional exemplary and recommended practices for addressing the learning needs of high achieving students.

During this search we discovered that several of the instructional practices recommended for use with gifted education students are identical to the recommendations given by persons interested in school restructuring. For this reason, we believed it was in the best interests of both students and teachers to concentrate our attention on these commonalities, rather than the differences. By emphasizing curriculum modification strategies that can be used with all students, we may also find that we have increased teacher acceptance and use of these strategies. With this more practical approach, we find ourselves advocating "tried and true" gifted education strategies as a technique for modifying the grade level curriculum for all students. If effective, we anticipate that these strategies should help educators achieve the following goals:

a) to increase intrinsic motivation for learning and student engagement through attention to individual interests and an increase in active learning, student projects and options;
b) to improve the likelihood of lifelong learning by equipping students with the learning-how-to-learn and cognitive skills that will allow them to acquire new content and skills independent of a formal school setting;
c) to enhance academic achievement through a modification of existing curriculum units in favor of increased attention to the major concepts, principles and the authentic knowledge and methodologies within each discipline;
d) to address various needs, strengths, interests and learning styles through the use of open-ended assignments, flexible grouping strategies, and a developmental perspective with regard to curriculum objectives;
e) to broaden the scope of the curriculum to include problem

RECOMMENDED PRACTICES FOR CURRICULUM MODIFICATION AND DIFFERENTIATION

1. Administer interest inventories, learning styles questionnaires, surveys regarding prior experiences or learning goals or teacher observations to identify student preferences, strengths, out-of-school accoplishments and talents.
2. Analyze and modify existing curriculum units to eliminate redundancy, increase authenticity, challenge and the alignment between objectives, assessment, and teaching and learning activities.
3. Give students an overview of the curriculum unit, or an initial learning activity that explains major goals and activities, demonstrates relevance and enhances student motivation for learning.
4. Develop differentiated, open-ended, or product-oriented assignments to address individual differences.
5. Allow students the opportunity to communicate prior knowledge or experience with learning activities or objectives and to indicate strengths, needs and preferences for learning activities, products or extension activities.
6. Organize flexible, small group instruction to address individual differences with respect to unit objectives.
7. Implement some form of pretesting or preassessment, prior to the beginning of an instructional unit, as a technique for identifying the extent to which individual students understand or can apply specific curriculum objectives.
8. Use a variety of large group teaching strategies (lecture, media, demonstration, hands-on activities, discussion, simulation, etc.) to insure student engagement and learning.
9. Incorporate community resources or the services of districtwide curriculum specialists to increase student attention,content authenticity, and to promote talent development.
10. Provide explicit, strategy-based instruction to promote cognitive, research, data collection, affective, communication and methodological skills as necessary to promote independent inquiry.
11. Construct interest centers, discovery centers, contracts or optional assignments to strengthen independent learning skills and to address individual needs, strengths and interests.
12. Offer problem solving simulations and activities that ask students to transfer learning objectives to authentic and complex applications and scenarios that require creativity and the use of higher level thinking skills.
13. Encourage students to pursue the answers to their own questions by providing suggestions and the opportunity for individual projects and exploratory learning activities.
14. Involve parents in home-based enrichment activities, tutoring, and the completion of challenging homework assignments.

—Deborah E. Burns

solving, transfer and product-development activities; and

f) to take a proactive position toward talent development for all students through the use of exploratory activities, methodological training and the opportunity to participate in self-selected projects, research and investigations.

INCREASE ACHIEVEMENT AND TALENT DEVELOPMENT

Our literature search and prior experience suggests that there are at least 14 different strategies that can be used with all students to promote increased levels of academic achievement and talent development. Viewed together, this set of strategies provides a vision of the various kinds of activities, instruction and management strategies that an observer would be likely to see in an ideal curriculum unit. Naturally, this vision also portrays a classroom where careful attention is paid to the individual strengths, needs, talents and learning styles of all children. See Recommended Practices for Curriculum Modification and Differentiation (p. 41).

HOW MIGHT THIS LIST BE USED?

We are confident that the increased use of several of the strategies described above will decrease our reliance on a one-size-fits-all curriculum and increase the likelihood that all children will achieve their true learning and talent potential. Although it is highly unlikely that any given curriculum unit will contain all of these features, the preceding list does offer a concrete vision for educational reform efforts that also incorporate the best practices from the field of gifted education.

During the last two years, staff members at the NRT G/T have developed video programs, organized staff development sessions and created training modules, handouts and research proposals to help interested educators implement selected recommendations from this set. Preliminary responses suggest that provisions for offering these services to all students, rather than to only the identified students in gifted education, does indeed increase the quantity and the quality of the components used within classroom curriculum units.

It is our hope that this list can also be used by others. Classroom teachers might prefer to adapt this list for use as a needs assessment instrument to identify current instructional practices as well as their preferences for future professional growth and study. Gifted education specialists might then respond to individual teacher preferences with offers of assistance with curriculum planning, pretesting, resource acquisition, peer coaching and/or team teaching. In a similar manner, building administrators might find this set of recommendations useful in identifying areas for data collection or action research, as well as providing a "menu" for future staff development activities.

Many teachers who are interested in meeting the needs of high achieving students within the regular classroom are likely to be innovative themselves; teachers who are working "on the edge" and who are constantly taking the necessary risks to improve the quality of their instructional strategies. This curriculum vision represents just another way of documenting these successes and planning for future improvement. As educators, we must view ourselves as we do our professional counterparts in medicine, law and business; as lifelong learners who continue to grow and improve in order to use the latest technology and research to make our learning environments even better. ■

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CASE STUDY

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in the ad hoc groups (compacted and non-compacted groups) was flexible and constantly changing because it was based on the instruction that students needed to understand various mathematical content and skills.

Two students, John and Philip, explained how mathematics compacting worked in their classroom. Philip said, "We take a pretest on a chapter, and if we get better than a 90% score, we don't do that chapter." When I asked him what they did instead, he replied, "We move ahead a chapter or do other things with it or sometimes we do different work like the average fifth grader project." When asked if they liked compacting, they responded:

"It is fun. We don't have to do the same work as everybody." (John)

"I don't have to do math I already know. I get to skip part of it and move on." (Philip)

To the students in Beth's classes, compacting just made "common sense." Students were always working on different assignments in the classroom, and even though I had not observed students showing envy or resentment about what other students were doing, I asked them to describe their peers' thoughts about compacting. John explained,

"Some kids don't make it, the 90%, and maybe they don't like it. I think kids are happy with it. Mrs. Windsor explained it at the beginning of the year. First she said it was 'harder work' and I wasn't excited, but after she explained it more, I liked the idea of compacting."

Toward the end of the school year, Beth Windsor had more

than two groups of students in each mathematics class. In one of the classrooms, students were placed in one of three ad hoc groups for work in mathematics and, on one of my visits, five students were working several chapters ahead of the rest of the class. Beth was meeting with the five students at a round table in the corner of the room and spent approximately ten minutes with them. During this brief time, she discussed ratio (something they were currently studying), and then, demonstrated how to use protractors to measure degrees in angles (which would come in the next chapter). Then, she dismissed the group by saying, "Do four pages [in the upcoming chapter on measurement of geometric figures]. Along the way, you decide which problems you need to do to help you understand measurement of triangles."

The noteworthy finding from this observation was not that she was accelerating one group significantly ahead of the other two groups, but that she was giving the responsibility to the students for their own learning. They accepted the responsibility! At this particular time the remaining members of this class were working two chapters apart in their mathematics text, one on proportions and the other on finding factions of whole numbers.

At the end of May, I asked Beth if she intended to do anything differently for instruction in mathematics the following year. She indicated that she wanted to "do more work on the management of mathematics compacting and develop learning centers for mathematics enrichment, one center for each quarter of the year." She indicated that the mathematics centers would be designed for everyone in her classroom and have enrichment and acceleration replacement activities within them. She had decided already on the topics for three of the centers, namely, estimation, measurement, and tessellations. In addition, she indicated that she wanted to be more definitive in placing students at the beginning of the year for compacting services. She stated,"I suspect that some students could be working further ahead, and I need to do more for girls, encourage girls in math, for example, by having some Type I's (exploratory experiences designed to interest students in a topic)."

Even though Beth Windsor had been providing curriculum compacting services to her students in a seemingly successful manner for some time, she was not satisfied with the status quo. She was already planning additional management strategies and content areas that she would explore in her classes the following year.

"I don't think it is humanly possible to do all that should be done for bright kids in the regular classroom. I have tried."

LESSONS TO BE LEARNED

Several successful practices could be observed in Beth Windsor's classroom. Curriculum compacting was the most salient of these practices. After spending several months at this site, I came to the following conclusions. First of all, Beth Windsor had a vision for students, not a general "curriculum plan," that guided her efforts. If students already knew the content or how to do something, she modified the curriculum and moved on. Secondly, she wasn't satisfied with the status quo, but was constantly making changes in her techniques, even when it meant experimenting with new practices and especially when it meant working hard.

Although Beth Windsor said it wasn't easy to provide for bright students in the regular classroom, she believed it was worth the effort. She said, "I don't think it is humanly possible to do all that should be done for bright kids in the regular classroom. I have tried. It is constantly a struggle to meet the needs of these kids."

Beth Windsor created a classroom at Woodland Elementary where students could go each morning knowing that they would not have to demonstrate previously mastered content and skills, but would instead have the opportunity to be involved in exciting and meaningful alternative enrichment and acceleration activities. The lessons learned from Beth Windsor should become a reality in other classrooms throughout the country. ■

Note: Woodland and Windsor are pseudonyms; assurances of confidentiality were provided to all individuals participating in the study.

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